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TRANSACTIONS

OF THE

NEW YORK STATE MEDICAL ASSOCIATION.

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J. C. BIERWIRTH, M. D., of Kings County, Chairman.

M. C. O'BRIEN, M. D., of New York County.

E. H. SQUIBB, M. D., of Kings County.

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TRANSACTIONS

OF

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FOR THE YEAR 1899.

VOLUME XVI.

EDITED FOR THE ASSOCIATION

By M. C. O'BRIEN, M. D.,

OF NEW YORK COUNTY.

NEW YORK STATE MEDICAL ASSOCIATION
FOUNDED 1884

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OFFICERS AND COUNCIL FOR 1898–'99.

The Sixteenth Annual Meeting was held at the New York Academy of Medicine, in New York City, on October 24, 25 and 26, 1899.

PRESIDENT.

JOSEPH D. BRYANT, M. D.,
54 W. 36th St., New York, New York County.

VICE-PRESIDENTS.

FIRST DISTRICT, JAMES G. HUNT, M. D.,
Utica, Oneida County.
SECOND DISTRICT, DOUGLAS C. MORIARTA, M. D.,
Saratoga Springs, Saratoga County.
THIRD DISTRICT, FRANK D. REESE, M. D.,
Cortland, Cortland County.
FOURTH DISTRICT, WILLIAM M. BEMUS, M. D.,
Jamestown, Chautauqua County.

SECRETARY.

M. CHRISTOPHER O'BRIEN, M. D.,
161 W. 122d St., New York, New York County.

TREASURER.

E. D. FERGUSON, M. D.,
Troy, Rensselaer County.

CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D.,
11 E. 43d St., New York, New York County.

MEMBER OF THE COUNCIL AT LARGE.

EDWARD H. SQUIBB, M. D.,
148 Columbia Heights, Brooklyn, Kings County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, CHARLES H. GLIDDEN, M. D.,
Little Falls, Herkimer County; term expires 1899.
" " JOHN P. SHARER, M. D.,
Little Falls, Herkimer County; term expires 1900.
SECOND DISTRICT, E. M. LYON, M. D.,
Plattsburgh, Clinton County; term expires 1899.
" " CRAWFORD E. FRITTS, M. D.,
Hudson, Columbia County; term expires 1900.
THIRD DISTRICT, W. L. AYER, M. D.,
Owego, Tioga County; term expires 1899.
" " LEROY J. BROOKS, M. D.,
Norwich, Chenango County; term expires 1900.
FOURTH DISTRICT, ZERA J. LUSK, M. D.,
Warsaw, Wyoming County; term expires 1899.
" " DELANCEY ROCHESTER, M. D.,
Buffalo, Erie County; term expires 1900.
FIFTH DISTRICT, FREDERICK H. WIGGIN, M. D.,
New York, New York County; term expires 1899.
" " CHARLES E. DENISON, M. D.,
New York, New York County; term expires 1900.

COMMITTEE OF ARRANGEMENTS FOR 1898–'99.

FREDERICK HOLME WIGGIN, CHAIRMAN,
55 West 36th Street, New York.
CHARLES ELLERY DENISON, SECRETARY,
68 West 71st Street, New York.

MORRIS N. BEMUS, Jamestown.
JULIUS C. BIERWIRTH, Brooklyn.
LEROY J. BROOKS, Norwich.
JOSEPH D. BRYANT, New York.
JOHN T. CAHILL, Hoosick Falls.
E. D. FERGUSON, Troy.
WILLIAM FINDER, JR., Troy.
JOHN W. S. GOULEY, New York.
F. W. HIGGINS, Cortland.
J. C. MACKENZIE, New York.
MACDONALD MOORE, Fredonia.
CHAS. MUNGER, Knoxboro.
M. C. O'BRIEN, New York.
THOMAS F. REILLY, New York.
F. W. ROSS, Elmira.
E. H. SQUIBB, Brooklyn.

OFFICERS AND COUNCIL FOR 1899–1900.

The Seventeenth Annual Meeting will be held in the New York Academy of Medicine in New York City on October 23, 24 and 25, 1900.

PRESIDENT.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

VICE-PRESIDENTS.

FIRST DISTRICT, CHARLES H. GLIDDEN, M. D.,
Little Falls, Herkimer County.

THIRD DISTRICT, J. M. FARRINGTON, M. D.,
Binghamton, Broome County.

FOURTH DISTRICT, W. H. THORNTON, M. D.,
Buffalo, Erie County.

FIFTH DISTRICT, J. C. BIERWIRTH, M. D.,
Brooklyn, Kings County.

SECRETARY.

M. C. O'BRIEN, M. D., New York, New York County.

TREASURER.

E. H. SQUIBB, M. D., Brooklyn, Kings County.

CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D., New York, New York County.

MEMBER OF THE COUNCIL AT LARGE.

J. D. BRYANT, M. D., New York, New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, CHARLES MUNGER, M. D.,
Knoxborough, Oneida County; term expires 1900.
" " DOUGLAS AYRES, M. D.,
Fort Plain, Montgomery County; term expires 1901.
SECOND DISTRICT, CRAWFORD E. FRITTS, M. D.,
Hudson, Columbia County; term expires 1900.
" " E. M. LYON, M. D.,
Plattsburgh, Clinton County; term expires 1901.
THIRD DISTRICT, LEROY J. BROOKS, M. D.,
Norwich, Chenango County; term expires 1900.
" " W. L. AYER, M. D.,
Owego, Tioga County; term expires 1901.
FOURTH DISTRICT, DELANCEY ROCHESTER, M. D.,
Buffalo, Erie County; term expires 1900.
" " M. W. TOWNSEND, M. D.,
Bergen, Genesee County; term expires 1901.
FIFTH DISTRICT, CHARLES E. DENISON, M. D.,
New York, New York County; term expires 1900.
" " FREDERICK HOLME WIGGIN, M. D.,
New York, New York County; term expires 1901.

OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1899–1900.

FIRST OR NORTHERN BRANCH.

The Sixteenth Annual Meeting will be held as appointed by the President.

OFFICERS.

PRESIDENT, CHARLES H. GLIDDEN, M. D.,
Little Falls, Herkimer County.

SECRETARY, E. H. DOUGLAS, M. D.,
Little Falls, Herkimer County.

EXECUTIVE COMMITTEE.

JOHN EDWARDS, M. D., Gloversville, Fulton County.
THOMAS McGANN, M. D., Wells, Hamilton County.
W. D. GARLOCK, M. D., Little Falls, Herkimer County.
J. MORTIMER CRAWE, M. D., Watertown, Jefferson County.
ALBERT A. JOSLIN, M. D., Martinsburg, Lewis County
N. A. CALDWELL, M. D., Hageman's Mills, Montgomery County.
G. ALDER BLUMER, M. D., Utica, Oneida County.
E. F. MARSH, M. D., Fulton, Oswego County.
GUY REUBEN COOK, M. D., Louisville, St. Lawrence County.

SECOND OR EASTERN BRANCH.

The Sixteenth Annual Meeting will be held at Hudson, Columbia County, on the last Thursday in June, 1900.

OFFICERS.

PRESIDENT, E. D. FERGUSON, M. D.,
Troy, Rensselaer County.

SECRETARY, JOSEPH, E. BAYNES, M. D.,
Troy, Rensselaer County.

EXECUTIVE COMMITTEE.

W. B. SABIN, M. D., West Troy, Albany County.
E. M. LYON, M. D., Plattsburgh, Clinton County.
C. E. FRITTS, M. D., Hudson, Columbia County.
F. J. D'AVIGNON, M. D., Au Sable Forks, Essex County.
GEORGE CONKLING, M. D., Durham, Greene County.
F. J. TOMPKINS, M. D., Lansingburgh, Rensselaer County.
F. F. GOW, M. D., Schuylerville, Saratoga County.
H. C. VAN ZANDT, M. D., Schenectady, Schenectady County.
H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
D. J. FITZGERALD, M. D., Glens Falls, Warren County.
JOHN LAMBERT, M D., Salem, Washington County.

THIRD OR CENTRAL BRANCH.

The Sixteenth Annual Meeting will be held at a place to be designated on the first Thursday in June, 1900.

OFFICERS.

PRESIDENT, J. M. FARRINGTON, M. D.,
Binghamton, Broome County.

SECRETARY, J. C. Fisher, M. D.,
Elmira, Chemung County.

EXECUTIVE COMMITTEE.

J. G. ORTON, M. D., Binghamton, Broome County.
W. R. LAIRD, M. D., Auburn, Cayuga County.
F. W. ROSS, M. D., Elmira, Chemung County.
L. J. BROOKS, M. D., Norwich, Chenango County.
H. O. JEWETT, M. D., Cortland, Cortland County.
W. B. MORROW, M. D., Walton, Delaware County.
MARTIN CAVANA, M. D., Oneida, Madison County.
ELY VAN DE WARKER, M. D., Syracuse, Onondaga County.
J. J. SWEET, M. D., Unadilla, Otsego County.
B. T. SMELTZER, M. D., Havana, Schuyler County.
F. G. SEAMAN, M. D., Seneca Falls, Seneca County.
W. L. AYER, M. D., Owego, Tioga County.
C. P. BIGGS, M. D., Ithaca, Tompkins County.

FOURTH OR WESTERN BRANCH.

The Sixteenth Annual Meeting will be held at Rochester, Monroe County, on the Second Tuesday in May, 1900.

Officers.

PRESIDENT, W. H. THORNTON, M. D.,
Buffalo, Erie County.

SECRETARY, (none appointed).

Executive Committee.

B. C. WAKELY, M. D., Angelica, Allegany County.
S. J. MUDGE, M. D., Olean, Cattaraugus County.
T. D. STRONG, M. D., Westfield, Chautauqua County.
DELANCEY ROCHESTER, M. D., Buffalo, Erie County.
FRANK L. STONE, M. D., Le Roy, Genesee County.
R. J. MENZIE, M. D., Caledonia, Livingston County.
E. M. MOORE, JR., M. D., Rochester, Monroe County.
W. Q. HUGGINS, M. D., Sanborn, Niagara County.
F. R. BENTLY, M. D., Cheshire, Ontario County.
J. H. TAYLOR, M. D., Holley, Orleans County.
C. S. PARKHILL, M. D., Hornellsville, Steuben County.
DARWIN COLVIN, M. D., Clyde, Wayne County.
A. G. ELLINWOOD, M. D., Attica, Wyoming County.
WM. OLIVER, M. D., Penn Yann, Yates County.

FIFTH OR SOUTHERN BRANCH.

The Sixteenth Annual Meeting will be held at Brooklyn, Kings County, on the Fourth Tuesday in May, 1900.

Officers.

PRESIDENT, J. C. BIERWIRTH, M. D.,
137 Montague St., Brooklyn, Kings County.
SECRETARY, E. H. SQUIBB, M. D.,
P. O. Box 760, Brooklyn, Kings County.

EXECUTIVE COMMITTEE.

I. D. LEROY, M. D., Pleasant Valley, Dutchess County.
J. D. SULLIVAN, M. D., Brooklyn, Kings County.
ELLERY DENISON, M. D., New York, New York County.
M. C. CONNER, M. D., Middletown, Orange County.
G. W. MURDOCK, M. D., Cold Spring, Putnam County.
E. G. RAVE, M. D., Hicksville, Queens County.
H. C. JOHNSTON, M. D., New Brighton, Richmond County.
FRANK OVERTON, M. D., Patchogue, Suffolk County.
J. L. C. WHITCOMB, M. D., Liberty, Sullivan County.
M. GAGE-DAY, M. D., Kingston, Ulster County.
E. F. BRUSH, M. D., Mount Vernon, Westchester County.

LIST OF PRESIDENTS AND VICE-PRESIDENTS FROM THE FOUNDING OF THE ASSOCIATION.

1884.

PRESIDENT.

HENRY D. DIDAMA, M. D., Onondaga County, Third District.

VICE-PRESIDENTS.

FIRST DISTRICT, J. MORTIMER CRAWE, M. D., Jefferson County.
SECOND DISTRICT, TABOR B. REYNOLDS, M. D., Saratoga County.
FOURTH DISTRICT, B. L. HOVEY, M. D., Monroe County.
FIFTH DISTRICT, *N. C. HUSTED, M. D., Westchester County.

1885.

PRESIDENT.

*JOHN P. GRAY, M. D., Oneida County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, *W. H. ROBB, M. D., Montgomery County.
THIRD DISTRICT, JOHN G. ORTON, M. D., Broome County.
FOURTH DISTRICT, JOSEPH C. GREENE, M. D., Erie County.
FIFTH DISTRICT, *J. C. HUTCHISON, M. D., Kings County.

1886.

PRESIDENT.

E. M. MOORE, M. D., Monroe County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, *WILLIAM GILLIS, M. D., Franklin County.
SECOND DISTRICT, H. C. VAN ZANDT, M. D., Schenectady County.
THIRD DISTRICT, *FREDERICK HYDE, M. D., Cortland County.
FIFTH DISTRICT, *J. G. PORTEOUS, M. D., Dutchess County.

*Deceased.

1887.

PRESIDENT.

*ISAAC E. TAYLOR, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, *JOHN P. SHARER, M. D., Herkimer County.
SECOND DISTRICT, L. C. DODGE, M. D., Clinton County.
THIRD DISTRICT, *GEORGE W. AVERY, M. D., Chenango County.
FOURTH DISTRICT, DARWIN COLVIN, M. D., Wayne County.

1888.

PRESIDENT.

*JOHN CRONYN, M. D., Erie County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, BYRON DE WITT, M. D., Oswego County.
SECOND DISTRICT, ROBERT SELDEN, M. D., Greene County.
THIRD DISTRICT, CHARLES W. BROWN, M. D., Chemung County.
FIFTH DISTRICT, EDWIN BARNES, M. D., Dutchess County.

1889.

PRESIDENT.

*WILLIAM T. LUSK, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, S. H. FRENCH, M. D., Montgomery County.
SECOND DISTRICT, *R. C. McEWEN, M. D., Saratoga County.
THIRD DISTRICT, ELIAS LESTER, M. D., Seneca County.
FOURTH DISTRICT, T. D. STRONG, M. D., Chautauqua County.

1890.

PRESIDENT.

JOHN G. ORTON, M. D., Broome County, Third District.

* Deceased.

VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.
SECOND DISTRICT, *M. H. BURTON, M. D., Rensselaer County.
FOURTH DISTRICT, E. M. MOORE, JR., M. D., Monroe County.
FIFTH DISTRICT, WILLIAM McCOLLUM, M. D. (vice WILLIAM B. EAGER, deceased), Kings County.

1891.

PRESIDENT.

STEPHEN SMITH, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.
SECOND DISTRICT, A. T. VAN VRANKEN, M. D., Albany County.
THIRD DISTRICT, J. D. TRIPP, M. D., Cayuga County.
FOURTH DISTRICT, R. J. MENZIE, M. D., Livingston County.

1892.

PRESIDENT.

*JUDSON B. ANDREWS, M. D., Erie County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, W. D. GARLOCK, M. D., Herkimer County.
SECOND DISTRICT, G. E. McDONALD, M. D., Schenectady County.
THIRD DISTRICT, LEROY J. BROOKS, M. D., Chenango County.
FIFTH DISTRICT, H. VAN HOEVENBERG, M. D., Ulster County.

1893.

PRESIDENT.

*S. B. W. McLEOD, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D., Oswego County.
SECOND DISTRICT, J. C. HANNAN, M. D., Rensselaer County.
THIRD DISTRICT, N. JACOBSON, M. D., Onondaga County.
FOURTH DISTRICT, Z. J. LUSK, M. D., Wyoming County.

* Deceased.

1894.

PRESIDENT.

THOS. D. STRONG, M. D., Chautauqua County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, *ISAAC DE ZOUCHE, M. D., Fulton County.
SECOND DISTRICT, *J. C. BENHAM, M. D., Columbia County.
THIRD DISTRICT, HOMER O. JEWETT, M. D., Cortland County.
FIFTH DISTRICT, J. D. RUSHMORE, M. D., Kings County.

1895.

PRESIDENT.

AUSTIN FLINT, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, DANIEL KLOCK, M. D., Montgomery County.
SECOND DISTRICT, *W. H. HODGMAN, M. D., Saratoga County.
THIRD DISTRICT, F. W. PUTNAM, M. D., Broome County.
FOURTH DISTRICT, M. W. TOWNSEND, M. D., Genesee County.

1896.

PRESIDENT.

DARWIN COLVIN, M. D., Wayne County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, C. H. GLIDDEN, M. D., Herkimer County.
SECOND DISTRICT, THOMAS WILSON, M. D., Columbia County.
THIRD DISTRICT, *F. G. SEAMAN, M. D., Seneca County.
FIFTH DISTRICT, *J. R. VANDERVEER, M. D., Orange County.

1897.

PRESIDENT.

CHARLES PHELPS, M. D., New York County, Fifth District.

* Deceased.

VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D., Oswego County.
SECOND DISTRICT, E. M. LYON, M. D., Clinton County.
THIRD DISTRICT, ROBERT ABERDEIN, M. D., Onondaga County.
FOURTH DISTRICT, ALVIN A. HUBBELL, M. D., Erie County.

1898.

PRESIDENT.

DOUGLAS AYRES, M. D., Montgomery County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, C. E. FRITTS, M. D., Columbia County.
THIRD DISTRICT, H. W. CARPENTER, M. D., Madison County.
FOURTH DISTRICT, C. C. FREDERICK, M. D., Erie County.
FIFTH DISTRICT, *N. W. LEIGHTON, M. D., Kings County.

1899.

PRESIDENT.

JOSEPH D. BRYANT, M. D., New York County, Fifth District.

VICE-PRESIDENTS.

FIRST DISTRICT, JAMES G. HUNT, M. D., Oneida County.
SECOND DISTRICT, DOUGLAS C. MORIARTA, M. D., Saratoga County.
THIRD DISTRICT, FRANK D. REESE, M. D., Cortland County.
FOURTH DISTRICT, WILLIAM M. BEMUS, M. D., Chautauqua County.

1900.

PRESIDENT.

E. D. FERGUSON, M. D., Rensselaer County, Second District.

VICE-PRESIDENTS.

FIRST DISTRICT, CHARLES H. GLIDDEN, M. D., Herkimer County.
THIRD DISTRICT, J. M. FARRINGTON, M. D., Broome County.
FOURTH DISTRICT, WM. H. THORNTON, M. D., Erie County.
FIFTH DISTRICT, J. C. BIERWIRTH, M. D., Kings County.

* Deceased.

LIST OF FELLOWS REGISTERED AT THE SIXTEENTH ANNUAL MEETING IN NEW YORK CITY.

Held October 24, 25 and 26, 1899.

FIRST OR NORTHERN DISTRICT.

FULTON COUNTY.

Edwards, John. Gloversville.

1

MONTGOMERY COUNTY.

Ayres, Douglas. Fort Plain.

1

ONEIDA COUNTY.

Hunt, James G. Utica.
Munger, Charles. Knoxboro.
Palmer, Henry C. Utica.
Reid, W. B. Rome.
Scully, Thos. P. Rome.
Whaley, James H. Rome.
White, H. D. Rome.

7

SECOND OR EASTERN DISTRICT.

ALBANY COUNTY.

Haynes, John U. Cohoes.
Sabin, Wm. B. Watervliet.

2

CLINTON COUNTY.

Lyon, E. M. Plattsburgh.

1

COLUMBIA COUNTY.

Fritts, Crawford E. Hudson.

1

ESSEX COUNTY.

Wheelock, A. A. Elizabethtown.

1

RENSSELAER COUNTY.

Ferguson, E. D. Troy.
Finder, William, Jr. Troy.
Hannan, T. H. Hoosick Falls.

3

SARATOGA COUNTY.

Bullard, Thos. E. Schuylerville.
Gow, Frank F. Schuylerville.
Swan, Wm. E. Saratoga Springs.
Warner, J. W. Saratoga Springs.

4

WARREN COUNTY.

Fielding, Fred G. Glens Falls.
Hunt, Wm. J. Glens Falls.

2

THIRD OR CENTRAL DISTRICT.

CAYUGA COUNTY.

Kenyon, Frank. Scipio.
Woodruff, E. G. Auburn.

2

CHEMUNG COUNTY.

Fisher, John C. Elmira.
Wales, Theron A. Elmira.

2

CHENANGO COUNTY.

Brooks, Leroy J. Elmira.
Packer, Thurston G. Smyrna.

2

CORTLAND COUNTY.

Hendrick, H. C. McGrawville.
Higgins, F. W. Cortland.
Reese, Frank D. Cortland.

3

MADISON COUNTY.

Carpenter, E. H. Oneida.

1

ONONDAGA COUNTY.

Aberdein, R. Syracuse.
Didama, Henry Darwin. Syracuse.
Walsh, Chas. J. Syracuse.
3

TIOGA COUNTY.

Ayer, W. L. Owego.
1

FOURTH OR WESTERN DISTRICT.

ALLEGANY COUNTY.

Barney, H. A. Belmont.
Witter, G. H. Wellsville.
2

CHAUTAUQUA COUNTY.

Eastman, H. A. Jamestown.
1

ERIE COUNTY.

Bayliss, A. W. Buffalo.
Cohen, Bernard. Buffalo.
Cott, G. F. Buffalo.
Dunham, Sidney A. Buffalo.
Frederick, C. C. Buffalo.
Hubbell, Alvin A. Buffalo.
Rochester, De Lancey. Buffalo.
Starr, Elmer G. Buffalo.
Thornton, Wm. H. Buffalo.
9

CATTARAUGUS COUNTY.

Sackrider, J. H. E. Randolph.
1

GENESEE COUNTY.

Townsend, M. W. Bergen.
1

LIVINGSTON COUNTY.

Spratling, W. P. Sonyea.
1

MONROE COUNTY.

Goler, G. W. Rochester.
1

WYOMING COUNTY.

Lusk, Z. J. Warsaw.
Truesdell, Gifford. Wyoming.
Wilson, M. J. Warsaw.
3

FIFTH OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

Atwood, J. W. Fishkill-on-Hudson.
Julian, John M. Pleasant Valley.
Le Roy, I. D. Pleasant Valley.
3

KINGS COUNTY.

Baldwin, L. Grant. Brooklyn.
Bierwirth, J. C. Brooklyn.
Biggam, W. H. Brooklyn.
Brundage, Amos H. Brooklyn.
Conway, J. F. Brooklyn.
Hicks, E. E. Brooklyn.
Little, Frank. Brooklyn.
Lloyd, T. M. Brooklyn.
McCollom, Wm. Brooklyn.
Milbury, Frank S. Brooklyn.
North, Nelson L. Brooklyn.
Page, E. D. Brooklyn.
Pray, S. R. Brooklyn.
Risch, Henry F. Brooklyn.
Rushmore, J. D. Brooklyn.
Russell, Wm. G. Brooklyn.
Squibb, E. H. Brooklyn.
Squibb, E. R. Brooklyn.
Steinke, Herman C. O. Brooklyn.
Sullivan, John D. Brooklyn.
Waterworth, Wm. Brooklyn.
Wieber, Adolph. Brooklyn.
22

NEW YORK COUNTY.

Alexander, Sam. New York.
Arnold, Glover C. New York.
Austin, David P. New York.
Baldwin, F. A. New York.
Bennett, Thomas L. New York.

Biggs, Herman M. New York.
Bryant, Jos. D. New York.
Bull, Chas. Stedman. New York.
Burtenshaw, Jas. Hawley. New York.
Carr, William. New York.
Cocks, Geo. H. New York.
Coley, Wm. B. New York.
Cowles, Frederick D. New York.
Curtis, G. Lenox. New York.
Davis, J. Griffith. New York.
Davis, Robt. C. New York.
De Garmo, W. B. New York.
Delphey, Eden V. New York.
Denison, Charles E. New York.
Denison, Ellery. New York.
Dennis, Frederic S. New York.
Dodin, Henry A. New York.
Dudley, A. Palmer. New York.
Dunham, Edward K. New York.
Eastman, Robert W. New York.
Einhorn, Max. New York.
Erdmann, John P. New York.
Ferguson, F. New York.
Flint, Austin, Jr. New York.
Fordyce, John A. New York.
French, John H. New York.
Gottlieb, J. Adelphi. New York.
Goldan, S. Ormond. New York.
Gouley, J. W. S. New York.
Grad, Hermann. New York.
Halsey, F. Spencer. New York.
Hammond, Frederick P. New York.
Harris, E. Elliot. New York.
Henry, Nelson H. New York.
Hepburn, Neil Jamison. New York.
Hillis, Thomas J. New York.
Hodgman, Abbott. New York.
Holden, T. N. New York.
Hope, Geo. B. New York.
Huddleston, John H. New York.
Janeway, E. G. New York.
Judson, A. B. New York.
Kalish, Richard. New York.
Knopf, S. A. New York.
Leale, Chas. A. New York.
Leale, Medwin. New York.

Leszynsky, Wm. M. New York.
Lichtschein, Louis. New York.
Lynch, P. J. New York.
Ludlow, Ogden C. New York.
Lukens, Anna. New York.
Lusk, William C. New York.
Mackenzie, J. C. New York.
Mason, Edwin Gaillard. New York.
Mayer, Emil. New York.
Meier, G. C. H. New York.
Meyer, Willy. New York.
Moran, James. New York.
Myles, Robert. New York.
Oppenheimer, Seymour. New York.
Parsons, John. New York.
Pooler, H. A. New York.
Power, H. Bonamy. New York.
Purple, Samuel S. New York.
Quinlan, F. J. New York.
Reilly, Thos. F. New York.
Richard, Montrose R. New York.
Sayre, Reginald H. New York.
Shrady, Arthur Melville. New York.
Shrady, John. New York.
Shrady, John Eliot. New York.
Silver, Henry M. New York.
Smith, A. Alexander. New York.
Smith, Stephen. New York.
Stearns, Henry S. New York.
Stern, Heinrich. New York.
Stewart, F. E. New York.
Stewart, Geo. D. New York.
Syms, Parker. New York.
Terriberry, Wm. S. New York.
Tucker, Alfred B. New York.
Tucker, C. P. New York.
Vincent, Ludger C. New York.
Wainwright, J. W. New York.
Waldo, Ralph. New York.
Walsh, S. J. New York.
Washburn, Wickes. New York.
Watkins, Robt. L. New York.
Wiggin, Frederick Holme. New York.
Woodward, J. H. New York.

ORANGE COUNTY.

Conner, Milton C. Middletown.

1

RICHMOND COUNTY.

Johnston, H. C. New Brighton.

1

ROCKLAND COUNTY.

Bayley, N. B. Haverstraw.

1

ULSTER COUNTY.

Gage-Day, Mary. Kingston.
Van Hoevenburg, H. Kingston.

2

SUFFOLK COUNTY.

Gibson, Wm. B. Huntington.
Overton, Frank. Patchogue.

2

SULLIVAN COUNTY.

Payne, C. S. Liberty.

1

WESTCHESTER COUNTY.

Brush, Edward F. Mount Vernon.
Granger, Wm. D. Bronxville.
Porteous, J. L. Yonkers.
Sands, Benjamin Jerome. Port Chester.
Sands, Norton Jerome. Port Chester.

5

NON-RESIDENT FELLOWS.

MacLaren, Wm. S. Litchfield, Conn.
Ricketts, Benj. Merrill. Cincinnati, O.
Spence, Henry. Jersey City, New Jersey.
Tuttle, Charles Alling. New Haven, Conn.

4

CORRESPONDING FELLOW.

Marcy, Henry O. Boston, Mass.

1

SUMMARY OF FELLOWS IN ATTENDANCE.

First district	9
Second district	14
Third district	14
Fourth district	19
Fifth district	133
Non-resident	4
Corresponding	1
Total	194

DELEGATES FROM OTHER MEDICAL ORGANIZATIONS AND INVITED GUESTS IN ATTENDANCE.

CALIFORNIA.

R. W. HILL, Los Angeles . . . . . Invited guest.

COLORADO.

W. W. BULETTE, Pueblo . . . . . Invited guest.

CONNECTICUT.

CURTIS H. BILL, Bridgeport . . . . Delegate.
WM. H. CARMALT, New Haven . . . . Invited guest.
T. D. CROTHERS, Hartford . . . . . Invited guest.
SETH HILL, Stepney . . . . . Delegate.
ELIAS PRATT, Torrington . . . . . Delegate.
GIDEON C. SEGUR, Hartford . . . . Invited guest.

ILLINOIS.

GEORGE H. SIMMONS, Chicago . . . . Invited guest.
B. T. WHITMORE, Chicago . . . . . Invited guest.

MARYLAND.

WILLIAM OSLER, Baltimore . . . . Invited guest.

MASSACHUSETTS.

E. G. CUTLER, Boston . . . . . Delegate.
ERNEST E. DOBLE, Boston . . . . . Invited guest.
REGINALD H. FITZ, Boston . . . . . Invited guest.

MICHIGAN.

O. P. BARBER, Saginaw . . . . . Invited guest.

NEW JERSEY.

WILLIAM J. CHANDLER, South Orange . . Delegate.
DANIEL A. CURRIE, Englewood . . . . Delegate.
WM. EDGAR DARNALL, Atlantic City . . Invited guest.
FRANK H. HORNING, Camden . . . . Invited guest.
RICHARD C. NEWTON, Montclair . . . Delegate.

NEW YORK.

S. P. AMES, New York . . . . . Invited guest.
JACOB H. ASCH, New York . . . . . Invited guest.

SIMON BARUCH, New York . . . . . Invited guest.
JOSEPH BAUM, New York . . . . . Invited guest.
CHARLES S. BENEDICT, New York . . . Invited guest.
CHARLES W. BOHMFALK, New York . . Invited guest.
L. L. BRADSHAW, New York . . . . . Invited guest.
JOHN W. BRANNAN, New York . . . . Invited guest.
LEO BURGHEIM, New York . . . . . Invited guest.
BURNETT C. COLLINS, Brooklyn . . . Invited guest.
B. F. DEXTER, New York . . . . . Invited guest.
JOHN MILTON DEXTER, New York . . . Invited guest.
FRANK I. DISBROW, New York . . . . Invited guest.
DANIEL J. DONOVAN, New York . . . . Invited guest.
BENSON M. FELDMAN, New York . . . Invited guest.
EDWARD D. FISHER, New York . . . . Invited guest.
GEORGE WHEELOCK GROVER, New York . Invited guest.
A. JACOBI, New York . . . . . Invited guest.
CHARLES N. D. JONES, New York . . . Invited guest.
THOMAS WOOD HASTINGS, New York . . Invited guest.
ALEXANDER LAMBERT, New York . . . Invited guest.
SAMUEL B. LYON, White Plains . . . . Invited guest.
J. MILTON MABBOTT, New York . . . . Invited guest.
JOSEPH W. MALONE, New York . . . . Invited guest.
MORRIS MANGES, New York . . . . . Invited guest.
J. P. McGOWAN, New York . . . . . Invited guest.
W. C. MEANOR, New York . . . . . Invited guest.
J. LEE MORRILL, New York . . . . . Invited guest.
WM. HOWE MORRISON, New York . . . Invited guest.
JACOB G. PAEPKE, New York . . . . Invited guest.
EDWIN O. PALMER, New York . . . . Invited guest.
FRANK J. PARKER, New York . . . . Invited guest.
WILLIAM H. PARK, New York . . . . Invited guest.
J. D. QUACKENBOS, New York . . . . Invited guest.
A. REICH, New York . . . . . Invited guest.
MELVIN SHELDON, Valatie . . . . . Invited guest.
CHARLES H. SHEPARD, Brooklyn . . . Invited guest.
J. E. SHEPPARD, Brooklyn . . . . . Invited guest.
GEORGE F. SHRADY, New York . . . . Invited guest.
HORACE S. STOKES, New York . . . . Invited guest.
J. B. THOMAS, Brooklyn . . . . . Invited guest.
A. H. RIEDEL, Brooklyn . . . . . Invited guest.
WILLIAM H. THOMSON, New York . . . Invited guest.
JOHN F. WHITMYER, New York . . . . Invited guest.

Ohio.

C. L. FAWCETT, Cleveland . . . . . Invited guest.

PENNSYLVANIA.

AUGUSTUS A. ESHNER, PHILADELPHIA	Delegate.
JOSEPH S. GIBB, PHILADELPHIA	Invited guest.
EDGAR MOORE GREEN, EASTON	Delegate.
W. W. KEEN, PHILADELPHIA	Invited guest.
F. SAVARY PEARCE, PHILADELPHIA	Invited guest.

SUMMARY OF REGISTRATION.

Fellows	203
Delegates	9
Invited guests	67
Total registration	273

ADDRESS OF WELCOME AND REPORT OF THE COMMITTEE OF ARRANGEMENTS.

By Frederick Holme Wiggin, M. D., Chairman.

Gentlemen: It gives me great pleasure, on behalf of the Committee of Arrangements and the Fellows of New York county to once more welcome you to our city and to the Sixteenth Annual Meeting of the New York State Medical Association, which promises in many ways to be one of the most auspicious events in the history of this Association.

The enthusiasm and interest taken in the meeting of last year, as shown by the greatly increased attendance, necessitated the obtaining by your Committee of a larger and more commodious hall, and fortunately we had not far to look for the desired accommodations. The Trustees of the New York Academy of Medicine having kindly placed at our disposal, for a moderate consideration, this beautiful hall in which we are to-day meeting, in the building which has long been recognized as the medical center of the city.

It is unnecessary for me to call your attention to the fact that the labors of your Committee, during the past year, have been unusually arduous and that as a result we have been able to present to you a programme of more than ordinary scientific interest. In making up this programme, we have endeavored to bear in mind that the object of this Association is not only the advancement of the Science of Medicine, but also the furtherance of social relations between the members of the profession. Therefore we have arranged to provide a luncheon for each day of the session, hoping that all the members and the guests of the Association will partake thereof, the object being, not only to promote, as I have before stated, social relations between

the members and their friends, but also to keep the Fellows together, thus enabling the President to begin the afternoon sessions on time.

We have also provided for an evening collation and a reception. The last in honor of the President of the American Medical Association, Prof. William W. Keen, M. D., L.L.D., of Philadelphia, Prof. William Osler, M. D., of Baltimore, and Prof. Reginald H. Fitts, M. D., of Boston, who have kindly come, at considerable personal inconvenience, to meet and instruct us. Many distinguished members of the profession and laity who have been invited to meet them have gladly signified their intention to do so. The other evening entertainment will follow the discussion on Expert Medical Testimony, in which several judges and eminent lawyers have agreed to be present and take part, i. e., the Hon. Willard Bartlett, justice of the Supreme Court, Appellate Division; Hon. Joseph F. Daly, Charlton T. Lewis, Esq., and Wm. A. Purrington, Esq.

The Trunk Line Association has again seen fit to grant a rate of one fare and one-third, on the certificate plan, for the round trip to those paying seventy-five cents (75 cents) or more coming to the meeting, provided that one hundred members and their friends visit New York at this time.

The registry office will open each morning at nine (9) o'clock. The morning sessions will begin promptly at ten (10) o'clock, and the afternoon sessions at two (2) o'clock. The large number of papers on the programme can be properly disposed of provided the Fellows are in attendance at the time appointed for the opening of the sessions, and the gentlemen who are to read the papers are on hand at the time allotted to them on the programme. It is unnecessary to call attention to the discourtesy of asking the writers of papers to read them to empty benches.

Notwithstanding the fact that a copy of the programme has been mailed to each Fellow, a brief summary of it may

be of interest. Your Committee has succeeded in securing fifty papers, and a lantern-slide exhibit, in addition to the President's address.

An analysis of the programme shows that the

First District	sends	5	papers.
Third	" "	3	"
Fourth	" "	8	"
Fifth	" "	24	"
Connecticut	"	4	"
Maryland	"	1	"
Massachusetts	"	2	"
Pennsylvania	"	1	"
Ohio	"	1	"
Virginia	"	1	"

In these four districts, Fellows of the Association from fourteen counties and invited guests from six States have contributed papers in the following proportions.:

First District,	Montgomery	County	1
" "	Herkimer	"	1
" "	Oneida	"	3
Third "	Onondaga	"	1
" "	Chemung	"	1
" "	Chenango	"	1
Fourth "	Livingston	"	1
" "	Monroe	"	1
" "	Erie	"	5
" "	Wyoming	"	1
Fifth "	New York	"	20
" "	Kings	"	2
" "	Westchester	"	1
" "	Suffolk	"	1
Other States			10

The fifty scientific contributions may be classified as regards their subject-matter as follows:

Surgery	11
Medicine	14
Obstetrics and Gynaecology	6
Eye Diseases	3
Genito-Urinary Diseases	1
State Medicine	1
Medicine and Medical Ethics	2
Orthopoedic Surgery	1
Skin Diseases	1
Nervous Diseases	3
Medico-Legal	5

Hoping that you, in your turn, will keep in mind the objects for which our Association stands, and that you will seek to further its interests during our few days together, I again bid you welcome, and declare the sixteenth annual meeting open.

PRESIDENT'S ADDRESS—THE INFLUENCE OF THE MEDICAL PRACTITIONER ON MEDICAL PROGRESS.

By Joseph D. Bryant, M. D., of New York County.

It may seem strange, in an atmosphere as dense as is this of ours with medical phrase, that I choose to address you upon any topic of medical education. But surely there can be no sentiment so dominant here as this one, except, let us hope, that of love for those for whose happiness we are responsible, and for Him to whom we owe the privilege of existence.

Medical education is commonly understood to mean the education gained from attendance at medical schools, rather than that born of the conscientious thought and labor of medical practice. Possibly it would be better if no mention were made at this time of medical schools as factors in medical attainment, as then the attention would be directed more definitely to the main object in view—the practice of medicine and of manly attributes as the means of the establishment of medical advance. A marked distinction should be made between these two means of medical attainment, the same, in fact, as is made between the engineering integrity of an underlying support in architecture and the symmetry and gravity of the burden that it sustains. The importance which this and kindred societies hold in the field of labor and advance is hardly realized unless it be made the subject of special thought.

The real significance of the labors of organized bodies of medical men rests in the outcome for the benefit of others, derived from the wisely conducted interchange of ideas, based on an intelligent experience, and supplemented of

course, but not submerged, by the good-fellowship begotten of a mutual participation in unceasing war waged against an insidious, tireless and finally successful foe—disease and its dread sequel—death. The beginning of medical knowledge was coincident with the outcome of the first effort for the relief of suffering—presumptively of the human kind. The first effort was the beacon of experience, and with the ending of the effort experience began. The germ of medical education had its birth at this time, and experience attended at the delivery, and the importance of the harvest was determined by the degree of appreciation of the result by all concerned, but more especially on the part of the quasi medical attendant.

Thus we find that the initial unit of medical endeavor and that of medical experience and of medical education were born almost simultaneously, and thereby was founded a new world of labor and experience, and established, I think we may say, the world's trinity of physical well-being, a trinity charged with the material welfare of human beings, and next in significance to the Great Trinity controlling their spiritual comfort and security. These primal results were the products of the efforts, perhaps of but a single individual, or, at all events, of individuals acting with spontaneous desires for the accomplishment of a similar purpose, the securement of the physical comfort and welfare of human animation. However this may have been, the result was the same, as no established advance in methods of relief could have taken place except as the outcome of a conference of the participants, in which the experiences of each were combined for the betterment of the methods of all.

Medical endeavor and, therefore, medical knowledge are the direct products of the sympathetic efforts bestowed by our kind for the relief of injuries arising because of the contentious nature of our earliest ancestry. Sympathizing friends and fellow-soldiers attended to each other's hurts

at that time, employing simple waters and common herbs for their purposes. No thought of vulgar recompense or of venal plan entered into the proposition nor followed successful efforts of relief. The act was not entirely foreign to that of the brute of to-day, who patiently licks the wounds of his kind. There can be no record of the first case thus treated, since its antiquity is coincident almost with creation itself and with the endowment of God's creatures, from birds to man, with the emotions of sympathy, a sentiment the handmaid of need, and wisely bestowed on all forms of animated creation possessed of the emotions of jealousy and anger.

Although sympathetic friends and comrades planted the first seeds of medical attainment, the germination and growth thereof were hastened by the further efforts of those who, stimulated by primary success or prompted by generous impulse, regarded themselves as specially fitted for the art of healing their kind. And if perchance any one of them was possessed of special knowledge—empirical, of course—of the effects of remedies, then indeed was he the most bountifully equipped for the labor, and correspondingly respected in his sphere.

In this manner the treatment of tangible afflictions, usually the result of injuries, was carried on. However, the unaccountable presence of internal disease, and especially the bewildering characteristics of epidemics, clothed their appearance with the garb of the supernatural, when the wisest men of the times, the priests, then accredited with a special knowledge of strange, supernatural and subtle agencies, were consulted. It is recorded that the priests by their prayers and exorcisms instilled hope into the afflicted, and in many instances effected apparently marvelous cures. How strange the fact that in this day of boasted intelligence similar methods of treatment should clasp hands and greet familiarly those heading the chapters

of the earliest history of human events. The so-called Christian therapeutics of to-day are more anomalous than were those of the earliest periods of our race. However, during that time, the invocations of the priests in behalf of their patients were not always followed by relief, and finally, fearing the effects of the loss of reputation, the uses of diet and drugs were called to their aid. Hence, we owe to the priests of that time our first knowledge of the beneficent effect of diet and of the internal administration of drugs. And to them also belongs the credit of much of the systematized beginning of the study and treatment of disease.

The healing art, as fostered and practiced by the priests of India, achieved noted triumphs thousands of years ago. The Vedas, the oldest literature of the Indians, a part of Sanscrit lore, give information concerning the training of doctors. At this time Charaka gave not only advice to the young regarding their proper fitting for the practice of medicine, but added that which concerns us the more to-day, the best means of imparting medical knowledge. He stated that the study of medical writings, the personal teaching of medical instructors and association with other physicians were the best means of acquiring a knowledge of medicine. He expressed himself also wisely when he added the following advice: "The man who has nothing but a theoretical training and is unskilled in the details of treatment knows not what to do when he comes to a patient and behaves himself as pitiably as a coward on the battlefield. On the other hand, a doctor who is only practical does not win the esteem of the best men." These words, written more than 2,500 years ago, are of greater relevancy at this day of advance and opportunity than at the time of their utterance. They bespeak not only of the wise forethought of their author, but also of the unchangeable interdependency in all fields of attempt between preparation and action, and in this of ours, between theory and practice.

If the attention be now directed but briefly to the records of Egypt, we find in this storehouse of ancient civilization evidences of much earlier and greater attainments in medicine and surgery than in India. In fact, in Egypt one finds evidences of prehistoric surgery, therefore, as yet of unmeasured antiquity so far as time record is concerned. However, the fact of their existence denotes the presence in their time of the fellow sympathy that prompted the efforts of relief. The papyrus Ebers, written 1552 years B. C., is a compilation of remedies and of the methods of treatment of disease, some of which are described as being ancient even at that period. It appears, too, that the Egyptians had given to anatomy a systematic consideration—of its kind—so long ago as 5241 years B. C.

Accounts of the established existence of medicine and surgery and of their application to the suffering are noted in the pages of Holy Writ. It is recorded of King Asa, who, "in his disease sought not to the Lord but to the physicians. And Asa slept with his fathers." Whether or not this ancient utterance was then intended to express the sarcasm that often prompts its modern recital, I will not attempt to indicate.

Another instance may be properly quoted. "And if men strive together and one smites another with a stone or with his fist and he die not * * * then shall he that smote him pay for the loss of his time and shall cause him to be thoroughly healed." In other and in modern practical expression, shall forfeit damages and pay his doctor's bill! Surely this is an illustration of altruistic character, and better fitted to our sense of appreciation than is the preceding one.

The familiar and oft-quoted experience of the good Samaritan and the beneficent effects of his applications to the sufferer by the wayside speak alike of the benefits of materialistic and of sympathetic therapeutics. The dual

associations of medicine and surgery, of suffering and piety, and of physical distress and human compassion, are of an antiquity co-equal with that of the application of human reasoning to the woes of physical and mental misfortune.

Thus it is apparent that human sympathy first prompted medical effort; that human sympathy and special fitness established the beginning of medical practice; that religion heeded the outcome, adopted and fostered the practice, and because of the erudition of its exponents recorded the results, thus laying a foundation for medical scientific effort. With the records of experience well kept and of ever-increasing importance, the steps to organized medical instruction, singly imparted by mentor to pupil, or through the combined efforts of the adherents of the peculiar schools of the time, were promptly taken.

Medicine was soon divorced from religion, and then practiced as an independent profession with great repute, especially in Egypt, where it took rank equal to that of the priestly one. The schools of medicine of the earliest times were not constituted as at the present. They were of an hereditary organization, sustained by the wisdom of the accumulated records of the experience of the forefathers, falling to the sons, who likewise added their experience and passed them along for the information of and amplification by their offspring, the next generation of physicians. The famous so-called schools of Cnidos and Cos were thus established and perpetuated. Hippocrates received his early education at the latter school. Surely, this plan of education constituted proprietary instruction in the strictest sense of the term. Soon physicians could gain their professional education in the temples along with those engaged in the attainment of the other learned professions, such as religion, law, mathematics and astronomy. Here we note the beginning of the university system of education of the present time.

But enough has been said already, it seems to me, to show conclusively the fact that medical education up at least to the time of the development of physiology, chemistry, pathology and the still later co-ordinate branches of medical science, owed not only its birth but also its upbringing and final firm establishment to the value and the perpetuation of the personal experiences of the crude medical endeavor of the first half of the recorded centuries of human existence.

The thirst for medical knowledge has extended from its points of inception in divers directions and in ever-expanding circles, along the lines of intelligent appreciation and human sympathy, interrupted now and then for a time by the exigencies of national conflict or decay, and by individual complacency or contention to the present time, bearing an ever-increasing resemblance to that familiar picture painted on the placid surface of the lake by a falling pebble, or, as defined by Pope:

> "The small pebble stirs the peaceful lake,
> The circle round, a circle straight succeeds,
> Another still, and still another spreads."

The advent of newer methods of observation, based on the application to medical research of the advances in collateral things, and the greater acumen, the product of increased opportunity and appreciation, supplanted rapidly the assumptions of empiricism with the rational conclusions of unerring scientific investigation. The hidden mysteries of the heretofore subtle agencies of disease are now being rapidly solved by the application to their presence of nature's similar agencies.

The previous conflicts waged by man against disease in self-defence are now changed to the substantial victories of aggressive action. Terror, woe and sadness, the heritages of earlier disease devastations, are supplanted by confidence, joy and gladness. Confidence in the power of man

to prevent, joy in the realization of the outcome, and gladness in the knowledge that misery and death are being pushed apace to the rear. Man's relation to the earthly order of things forbids that this conflict shall cease or that he shall be victorious. Nor need we hope for any change in this regard until, perhaps, the discovery and isolation of the bacillus of old age shall establish a rivalry between human longevity and infinite time.

The facts of substantial merit that have thus far been attained in the field of medical endeavor are the accumulated product of the efforts of those who have engaged in the practice or the study of medicine. The practice of medicine has achieved the more because it has demonstrated not only the trustworthiness of its own dogmas, but also the soundness of the faith of the student. In view of these facts, it requires no emphasis of statement to remind you of the importance of your own individual efforts in these matters, nor of the fruit thus far borne by those of our antecedents, who were prompted in their striving rather more to do good than to gain riches or favor.

As already stated regarding the significance of organized bodies of medical men, it relates not only to the scientific combat of disease, but to the cultivation of that sentiment of goodfellowship which gains firmest root in the breasts of companions in arms. A numerous, able and well-trained membership, possessed of proper *esprit*, is as essential to the successful conduct of a medical as of a military organization. The success and standing attending the efforts of organized professional or business action depend entirely on the measure and character of the labor performed. The relation of these characteristics to each other should be mutual and interdependent, thus producing the maximum amount of high attainment. Those who have had special experience in a given line of action or of thought, and are known to be careful and conscientious observers, and

equally careful and conscientious in the statement of facts, should be encouraged when needful, and secured when feasible, to express through the channels of established organization their well considered knowledge. On all such occasions as these the lustre of personal attainment is shed through and upon the channels of its utterance.

The sacrifice of time in pointless discussions is pernicious, as it constitutes not only an abuse of opportunity and intelligence, but fosters romance and ostentation. No one is wise enough to speak profitably, without preparation, on a topic thoroughly presented, unless it be one of special interest to himself. Therefore, the reputation of all and the station and dignity of professions demand that the participants in their discussions shall be fitted by experience and preparation to consider the subjects on trial. Any other course than this dilutes facts with fancy, and unmans emphasis with puerility. Discussion conducted solely along the lines of friendly acquiescence or of gracious complacency is the better suited to the graces of a feminine tea than to stern duty of combating disease, or of surmounting the difficulties of human opposition or those of nature's bequests.

Scientific papers should emanate from sources which can add something to the store of knowledge, something that refutes or verifies an old, or that proposes or sustains a new proposition. The presentation of a dissertation only because invited to do so, or for any other reason—or excuse—in the absence of the possession of facts of importance, is making a convenience of other people's desires and perpetuating the display of personal vanity. In other words, the successful outcome of the discussion on an important topic requires that the participants be afforded the time and opportunity to enable them to express concise, intelligent and up-to-date facts and opinions regarding it.

The adoption of measures of this kind in connection with the consideration of living topics of common or of special interest produces vitalized definite products. Any other course is one likely to refresh the memories with moribund facts at the expense of greater opportunities. Mann said: "Every addition to true knowledge is an addition to human power." It may be said with equal force, misguided efforts rob human possibility of important opportunities. The proper *esprit* is essential to success in every undertaking. Neither individual nor organized efforts can attain the eminence of true merit without persistent labor for the common purpose. The domination of the church in general affairs and in medicine during much of its past history demonstrates forcibly the power of *esprit du corps* in the attainment of successful determinations.

The principles of action which lead to the success of individual effort apply with equal force to that of organized membership in its efforts. And, by the same token, the creations of those animated only by effeminate complacency are as unstable and unabiding as are images of sand. It is well in all instances of individual construction for common purposes to recall the wise saying, "No chain is stronger than its weakest link." The being enrolled in the support of a cause, or the maintenance of a purpose, medical or otherwise, constitutes a visible asset of the endeavor, but the fact alone that assets are present, even in ponderous dimensions, does not establish the success nor maintain the worth of the outcome of effort. The question is, Are the assets available, are they productive, are their products of high comparative value, and how are they esteemed in the open markets of exchange of the professional and business worlds?

In the event of failure of high appreciation of the products of one's labor, it is then both becoming and wise to pause and ascertain the reasons of the failure, and in doing

so it should not be forgotten that the admission of defeat or of the liability of it constitutes the strongest incentive to the accomplishment of a purpose. A nature possessed of a kind of courage that impels one frankly to admit a fault, to acknowledge a failure or to confess ignorance, will not submit to abasement. The same courageous manhood that commanded the acknowledgment will quickly lead to victory. It is not in the natural order of things that the worth of the contributions to human welfare and advancement of a person or an aggregation of persons shall eclipse the good that follows in the same realm of endeavor, of all others of mankind.

These contributions at the best can but point the way, and in so doing the beacon of experience serves as a guiding light to the greater and higher attainments of those who follow.

A profession having in charge the physical welfare and comfort of human beings contributes very much indeed to the happiness and prosperity of the people. No adequate means of estimating the worth of these services has yet been determined nor will it ever be known. Although the influences of environment, of custom and of demand, regulate the standard of vulgar remuneration, there can be no true measure placed on the infinite value of the sentimental, social and scientific outcome of medical cure. How important then it is that those who devote their lives sincerely to the fulfillment of so sacred a trust shall shun the pitfalls of venal practices, and of all contentions in which the public has no sympathy and which are antagonistic to the sacred precept

"As ye would that men should do to you, do ye also to them."

It seems to have been ordained as a duty that each shall labor faithfully for the welfare of others, and as an earnest of this we are commanded, "Thou shalt love thy neighbor

as thyself." If the product of any human effort whatsoever be available to meet the wise needs of comfort or thrift, then surely has their author, dutifully or not, added something to the beneficent contents of the storehouse of well-being. Impotent indeed is he who has neither the opportunity, the ability nor the inclination to contribute anything for the betterment of those around him, nor to the advancement of a cause of which he is a part. Fortunately nothing in this world is made in vain; nothing is lost. And although the good that one does may live after him, his ashes and those of the worthless serve alike to fit the soil for, we hope, a fruit of higher development.

Let us briefly measure our time as members of this Association with that of those who made it possible for each of us to regard himself as a reputable member of an honorable profession. The sympathy that stimulated the first efforts of relief is far more potent to-day than during the midnight era of unrecorded time. The means of the attainment of knowledge are now prolific and ever increasing. The ignorance, the contention and the bigotry which dwarfed and suppressed advance in earlier time are now supplanted by established learning, by honest debate and by thoughtful appreciation. Are we fully cognizant of the bountiful age in which we are living; and are we doing our parts as individuals and as an organization in a manner best intended to meet the approbation of those whom we now serve and those who are to follow?

It may not be amiss if each of us pause occasionally in our life's labor and indulge in introspection, inquiring, Can I not add yet more than I am now doing to the medical armamentarium for promoting human comfort and longevity? Are the intellectual products of my opportunities amply dedicated to the service of general human relief, or are they too often perverted to the advantages of individual gain? In other words, am I practicing medicine as a con-

sistent member of an honorable profession, or as a thrifty agent exploiting a business proposition? Is the sympathy which gave birth to my profession as keen and unselfish in my enlightened breast as in the breast of the pagan of the earliest time? Meditations of this character are healthy mental exercises and will beget promptings which, if heeded, will increase self-respect and exalt the profession of our choice. Those of us who for any reason are unable to contribute to the store of knowledge should be earnest in the determination to meet the demands of duty along other channels of human requirements, cheering ourselves with the thought that,

> "Knowledge is the hill that few may hope to climb.
> Duty is the path that all may tread."

THE NECESSITY FOR EXACT EVIDENCE IN TREATING SCIENTIFIC SUBJECTS.

By Wickes Washburn, of New York County.

"It is thought by many, who have not been at the pains to examine what Science is really doing in our day, that the wonders she presents to men's contemplation, the startling revelations which are being made from day to day, are merely dreams and fancies, which replace indeed the dreams and fancies of old times, but have no worthier claims on our belief. Those who carefully examine the history of science will be forced to adopt a very different opinion."—(Proctor).

During the lifetime of those here present the greatest advances in science have taken place. Geology, paleontology, biology, physiology, chemistry, and the science of medicine have all developed more since about 1859 than in all that period which went before. This has been accomplished very largely by adhering to the advice of Goethe, as expressed in the following verse from "Faust":—

> "Let him look round him, standing without fear;
> This world speaks plain for who has ears to hear;
> He need not stray within the vast to be,
> But clasp what he can feel and see."

This quotation from a noted scientist is as pertinent today as when it was uttered in the last century. It shows well that he who treats scientific subjects unless he does "clasp that *only* which he can feel and see" is extremely likely to have something to fear, as did the illustrious author of this verse—who has more or less constantly embroiled when he left his verse, writing, in which he had few

superiors, for scientific work—into which he took too much of his truly great poetic nature.

How odd it seems to us now that in the last century there should have been two distinct sets of scientists—the one known as the ovulists, considering the egg the real animal germ, the other, the animalculists who believed the spermatoza to be the real germ. To-day we know both to be equally unfounded and trace the individual human embryo from the single cell through a series of transformations no less wonderful than the metamorphosis of the butterfly.

In geology no less than in biology and physiology—wrong conclusions were drawn and men and professions long discredited in consequence. We may say that a new era of reasoning from the known and demonstrated appeared about 1859; but not all who treat of scientific subjects have yet fallen into the truly scientific method of accepting as fact that only which is proven.

Again Goethe gives good advice, which he himself sadly neglected:

> "Nor husk nor kernel Nature brings—
> For all one only type of things.
> Yet prove thyself and seek to know
> If husk or kernel thou dost show."

One is forcibly reminded when reading much that is written on medical subjects that both these golden rules of Goethe are often forgotten. New remedies are constantly coming up that never would if only very elementary principles were borne in mind. Conclusions as to diagnosis and treatment and prophylaxis are gravely promulgated when the error which led to them can easily be seen.

The now famous experiment before a body of eminent medical men to determine whether or not gas pumped into the rectum of a dog would ascend beyond the ileo-caecal valve, and the conclusion gravely announced that it would not—required further consideration when it was discovered

by some one who took the trouble to examine—that the animal was a female and that the tube had been inserted in the vagina.

As simple as this error was, men all along have been and are making such errors, and we as a profession often place ourselves in false positions by such careless processes of thought.

We have not our animalculists and our ovulists of to-day, but we have many matters regarding which there should be greater unanimity of opinion than now obtains.

One specialist, we are told, examines sputum from a supposed phthisis patient and reports "that it is a case of phthisis" another reports that "it is not." The same is frequently the case with diphtheria suspects and other contagious disease cases. What then is the true condition and what is the remedy for this conflict of statement? Why do conclusions so radically differ?

To answer the last question first, it is because all obtainable facts regarding the case are not considered. The condition is brought about in this way. We have been taught to consider all cases where the tubercular bacilli are found in bronchi, as phthisis, and where the diphtheritic bacilli are to be found in throats, as diphtheria, and so on. Now I am but getting back to elementary principles in considering whether or not this is so.

Pediatrics of August, 1898, contains the statement of a well-known physician, Dr. Allen, who while treating a case which both clinically showed diphtheria and in the germ cultures showed the Loeffler bacillus, bethought himself to examine cultures from the throats of other members of the family, all perfectly well. In the cultures from others of the family, "much to the good doctor's disgust" the Loeffler bacillus was plentiful and virulent and so remained for three or four weeks longer with no clinical symptoms whatever.

But why this disgust, since the patients were well, and remained so—did it tend at all to discredit his one case—to my mind not in the least. So also Dr. Gross, of Boston, found the bacilli in eight per cent. of normal throats.

The acceptance of tubercular bacilli or diphtheritic bacilli alone as evidence of the disease is a monstrous thing, as would have been a diagnosis from the cultures alone in the case of Dr. Allen's healthy members of that family. The source of error in both these cases is quite similar.

We know that in the dust of a room, in the cracks of a floor, the various bacilli may remain virile for a longer or shorter period. Shall we, therefore, conclude that the room is a case of diphtheria or phthisis, because we have found harbored by it a lot of diphtheritic or phthisis germs? Or shall we, with Dr. Patterson, of Philadelphia, go to the other extreme and say that the presence of virulent germs (streptococci) makes no difference because virulent streptococci were found in normal healthy urethra.

Out of all this seeming contradiction does there appear any way without discrediting the observations of some? To my mind there does—and a very simple one.

The germs that have found lodgment in the cracks of the floor have fallen upon unsuitable soil and so remain innoxious; those found in healthy urethras of Dr. Patterson's cases, which remained normal and healthy, or the cases of Dr. Gross—fell upon ground unsuitable for their continued life and reproduction; the same is true of those diphtheria germs found in the air passages of Dr. Allen's healthy patients—although associated with their diphtheria-ridden relative, and those in the normal throats where Dr. Gross, of Boston, found them.

All agriculturists know that there is a certain condition of soil necessary for seed growth; when we cultivate germs artificially we find certain conditions to be necessary (the element of time is one) and it seems to me, it has been shown

that certain conditions (unknown perhaps) are necessary before germs of the various kinds find habitation and a chance to fulfill their deadly mission.

In the *Medical Record* of December 10, 1898, Dr. H. Loomis speaks of the pretubercular period of phthisis and gives some intimation of how the bacilli and alveolar walls are prepared for the proper reception of this dread enemy of man, the tubercular bacillus.

If we accept this idea of receiving, but not giving proper reception to these various bacilli until certain conditions arise, as being correct—to what conclusions does it drive us, and what questions arise for future settlement? If the diphtheria bacillus may find lodgment in a perfectly healthy throat without detriment to that throat in some instances, what are those instances, and how long may the bacillus remain under those conditions without causing harm to the individual or meeting its own death? And again, how shall this condition be maintained in the patient until after the death of the bacilli? The answer to both of these must come in the future, but for the present we may conclude that to maintain a rugged constitution and live in the open air as much as possible promise the best chance of successfully maintaining an immune condition.

To accept the facts will cause some changes in statistics—but no one in search of truth should mind that. The report of our Board of Health should read as it does in the first lines, "The examination of cultures made by inoculating the tubes with the exudation from the throat of ——— shows presence of diphtheria bacilli," but it should not go on to state "The case is thus one of true diphtheria" for the exudation from the throats of Dr. Allen's healthy cases showed the same thing. On the other hand there would appear to be reason to think that in cases of true diphtheria and true phthisis, since both recover, that there must be a

period when the parties has outlived the bacilli and still suffers from the ravages of the disease.

That this is so seems not only logical but is supported by the fact that specimens of exudation or sputum have been submitted occasionally to two competent authorities—the two specimens taken at about the same time—one finds bacilli and the other does not. We are driven then to the conclusion either that the one examiner has failed to find that which really existed or to the conclusion that the bacilli are not at all times present. In this case the latter has come to be accepted by some as the fact. To conclude, then, the presence or absence of bacilli of any kind should not be accepted without concurrent facts as indicating a given disease, but simply as confirming the clinical symptoms where there are any, *helping* to make a diagnosis where there is disease and serving as a warning when found in healthy persons.

If I have pointed out any new line of thought I am glad to have contributed to the general advance. If I have only voiced an old idea, I hope I have done so without adding aught of error.

"Truth crushed to earth shall rise again,
The eternal years of God are hers;
While error wounded writhes in pain
And dies among her worshippers."

ANIMAL PRODUCTS USED AS MEDICINES, ANCIENT AND MODERN.

By Thomas J. Acker, of Westchester County.

The ancients, according to their materia medica, employed nearly three hundred different remedies obtained from the animal kingdom with which to treat various diseases of the human race. The works of Paulus Aegineta, Celsus, Hippocrates, M. M. Pomet, Lernery, James' Medicinal Dictionary and Quincy's Dispensatories, furnish us with a long list of the various animal products employed to mitigate the sufferings of humanity. It is very evident that physicians first employed these animal substances in the treatment of diseases, as it was a favorite idea that the use of the healthy parts, or organs of animals either as medicine or food, would restore similar diseased organs or tissues of the human body.

In Pomet's "Complete History of Drugs," published about a century and a half ago, one hundred pages are devoted to animal medicines, and also a specimen of therapeutical logical reasoning, viz.: "The different degrees of volatility that are in animal substances give them different virtues, one from the other; so those which have so very volatile salts are usually reckoned cephalick and diaphoretick; as the viper, human skull, hartshorn, goat's blood, elk's claw; because the matter being heated in the viscera, pushes forth their salts into the brain, and by the pores of the body. Those whose substance is less volative have an aperitive virtue, such as is to be met withal in hog-lice and craw-fish; because the salts of these animals being heavier are more inclinable to precipitate and open the urinary passages."

A large proportion of the animal substances employed by the ancients were used prior to the time of Hippocrates. The ancient materia medica was supplied from nearly every class of the animal kingdom, as the following list fully demonstrates, viz.:

Antelope—The rennet. Ass—The dung and liver. Anchovy—The head; the whole fish was applied to the feet in fever. Aleyomia—Consisted of the bones of fishes vomited by the king-fisher. Ants—Volatile salt. Bull—The blood and horn. Bezoar—Stone in the stomach (Bezoar stone.) Bear—The blood, fat, skin, bile, liver. Bat—Blood. Beaver—Castor.

Birds'-nests—Many kinds were employed. Those of the swallow found in China were considered the best. Pomet tells us that, "The Chinese assign mighty virtues to this nest, as it nourishes extremely, being boiled in water with a fowl and ginger. They reckon it very good for curing pains at the stomach, and for restoring those that are in a languishing condition."

Buprestis—(Burn-cow.) "An insect to which the ancients attributed poisonous properties, like those of cantharides and which was used in medicine." Bees, or honey flies—The honey, wax and whole insect. Buccium—(A specie of mollusk.) Cow—The dung and bile. Camel—The urine, brain, rennet. Chamois—The stone found in the stomach, fat, bile, blood, liver, dung. Cat—The dung.

Cock — The brain. Cormorant — Stomach and liver. Crocodile—Dung and blood. Chalcidic lizard—Entire animal. Chameleon—The blood. Calionimus (a kind of fish)—The bile. Crab—The claws, ashes, eyes and entire animal. Cicada—(Harvest-fly.) Cockroach—Entrails. Cantharides, caterpillar, cochineal, centipede. Cuttle-fish—bone, ink-fluid, and entire body. "The eggs or spawn of the cuttle-fish provokes urine and the terms."—Pomet. Coral, Dog—The liver, dung, fat. Duck—The blood. Domestic fowl—The

blood, fat, bile and dung. Dog-tick—Entire. Dentalium (a mollusk)—Their operculæ or lids. Elk—The hoof. Elephant—Bones, hoofs, teeth.

Eagle—The testicles, dung, bile, flesh, brain, and "a stone that is found at the entrance of the hole where the bird builds her nest." (The eagle-stones were said to procure easy and safe labor, and to prevent miscarriage.) Earthworms—Volatile salts. Echinus (or sea urchin or sea eggs.) Fox—The fat, lungs, whole animal. Frog—The blood and whole animal. Goat—The balls of hair found in the stomach, urine, horn, dung, fat, bile, liver, blood. Goose—The fat, blood, dung. Hart—The horn. Horse—The rennet, dung, blood. Hippopotamus—The fat, testicle, ashes. "A ring made of the pizzle, and worn is said to cure the cramp."—Pomet. Hogs—The bile, fat, dung, anklebone. Hedgehog—The skin and flesh. Hyaena—The bile. Hare—The liver, kidneys, testicles, rennet, bile, uterus, astragulus, dung, coagulum, heart, blood, eye, lungs, head, brains, hair, ashes. Hawk—The bile. Herring—The head. Hippocampus—The ashes, entire body. Hermit-crab or soldier—Oil, ashes. Harpa—(A genus of mollusks.) Helix pormatia, and other snails.

Kite—The head. Lion—The fat. Lark—The whole bird. Lizard—The entire animal, liver, dung, head, blood. Limpet—(A mollusk.) Man—The mummy, "man's skull, moss of a dead man's skull." Dead man's hand, "Royal touch," fat, nails, hair, milk, blood, heart, marrow, urine, sweat, saliva, semen, ear-wax, stone in the bladder, menstrual discharges, the membrane found around the head of the foetus, "Secundines," or after-birth, and dung. Mule—The urine. Mouse—The head and dung. Man-of-war-bird—"The oil or fat is a sovereign remedy for sciatica pains and for all others proceeding from a cold cause." Musk-rat—The testicle. Mullet—The entire fish. Meloe—A specie of beetle having vescicatory properties (beetle-oil.) Millipedes (sow-

bugs or hog-lice)—The oil, volatile salts and powder. "Of millipedes there are many preparations, but the best way of taking them is certainly swallowing them alive, and the next to that, their expression made with wine."—Pomet.

Narwal (sea-unicorn)—The oil, horn. Nerita—(A specie of snail.) Ox—The ankle and thigh bones, bile, dung, fat. Owl—The blood. Ostrich—Skin of the stomach, flesh and fat. Oyster—The shell. Pigeon (tame)—The blood. Peacock—The dung. Partridge—The bile. Pigeon (wild)—Stomach, blood, dung. Pearl—Shells. Roebuck—The bile, liver, rennet, dung. Rhinoceros—Horn. Ring-dove.—Dung and blood. Sheep—Brain, skin, wool, bile, dung. Stag—Heart, brain, lungs, blood, fat, marrow, sweat, flesh, tears, bone of the stag's heart, hoof, horn, tooth, tail, testicle, penis and the balls of hair found in the stomach. Seal—The rennet. Sea-cow—Stone or bone in the head. Stork—Dung. Swallow—Whole bird, brain, blood, dung. Starling—The dung. Serpent—The skin. Swift—The whole body. Sea-skink (a kind of lizard)—The kidneys, belly or stomach, and whole animal. Salamander—The entire body. Shark—Spawn, bone of the head, fossil teeth, which were worn around the neck of children, in strings like beads and were supposed to facilitate or aid in cutting their teeth.

Shad—The whole body. Sea-scorpion—Bile and oil. Squilla—Entire body. Spider—The web and entire animal. Scorpion—The oil and ashes. Silk-worm—Cocoon, "the raw silk taken in powder, makes the heart pleasant, the spirits brisk and cleanses the blood."—Pomet. Strombus—Operculæ or lids. Turtle (land)—Oil and blood. Toad—The whole animal, oil, blood, stone in the head, and volatile salt. Tortoise (sea)—The bile, oil, blood and volatile salt. Tunny—The volatile salt. Teredo (a mollusk)—Operculæ or lids. Unicorn (fossil unicorn, or fossil unicorn's horn)—The horn. Vulture—The gall, fat, flesh, brain and dung. Viper—Heart, gall, fat, liver, skin, the body removed from

the cuticle and intestines, volatile salt made from the whole animal. "Both for external and internal uses there is scarcely found a more universal medicine than the volatile salts of vipers." "All other preparations of vipers, as powders, fixed salts, tinctures, decoctions, broths, jellies, wines, essences, troches, elixirs, extracts, etc., compared with the volatile salt, are nothing, for in that is to be found the sum of all that is in the viper."—Pomet.

Wolf—Dung and liver. Weasel—Brain, stomach, entire animal. Whale—Spermaceti. "In the year 1688, there was one taken by a Spanish ship, that carried it to St. Sebastian, from the head of which were taken twenty-four barrels of brain, and from the body ninety-six barrels of fat. They ought to be undeceived who believe that spermaceti is anything else but the brain of the cachalot; and I can affirm this with certainty."—Pomet.

Modern.

Acetum cantharidis (vinegar of cantharidis.) Adeps—Lard. Apis mellifica—Mel or honey, infusion. Antidiphtheritic serum—(from the horse) Anti Streptococcic serum. Anti-tetanic serum, used in tetanus—Anti-tubercle. Bile—Ox gall. Blood—Of different animals. Bone—Ash: black, powdered bone, animal charcoal. Butter. Beef, Extract of—Armour's, Liebig's, Valentine, Blatta orientalis—Cockroach; *Linn.* Bone marrow extracts. Beef peptones—With malt extract. Bovinine—Made of bullocks' blood. Cuttle-fish, bone—Os sepiae. Crab's eyes or stones—They are concretions in the stomach of the crawfish, (astacus flaviatilis, lapides cancrorum or eye-stones.) Cardine—Used for weak heart, dropsy, etc. Cerebrine—Used in epilepsy, neurasthenia, etc. Carnogen—Prepared from red marrow and hemoglobin. Coley's mixture of the toxins of erysipelas and prodigiosus. Cerra flava—Beeswax. Cantharis—Spanish flies. Castoreum—From castor

beaver. Cetaceum—Spermaceti (from whale.) Coccus .or cochineal. Cod-liver-oil—A fixed oil from the liver of gadus morrhua. Eggs—Their shells, albumen, etc. Eskay's Albumenized Food—Contains egg-albumen and cereals. Fornica-rufa—(Red ant.) Gelatina—Gelatine, glue. Goose—Grease. Hog's lard.

Honey. Feralboid—A peptonized albuminate of iron, use for chlorosis. Hydrolene—A compound of "Cod-liver-oil, water, soluble pancreatin, soda and Salicylic acid." Haeminal—"Which is the equivalent of fresh bullock's blood." Ichthyocolla—Isinglass, the swimming bladder of acepencer huso and of other fishes. Ingluvin—Prepared from ventriculus callosus gallinaceus (from the domestic fowl, gallinaceous, used as a specific for vomiting in pregnancy. Kumiss—Is fermented mare's milk, which is extensively used as a beverage and for medicinal purposes by the Kirghis, Kalmucks, Turkomans, Nogays and other nomad tribes of the Russian Empire. Kina tonic—Iron, arsenic, strychnia, ox-blood, quinia and calumbo. Kumysgen—Is a preparation of powdered milk so treated during the process of manufacture as to render it easily digested. Lanolene—Grease from sheep's wool. Lactopeptine—A remedy used in the summer complaint of children. Lacto somatose—Milk and albumen. Moschus, or musk. Mutton—Suet, serum. Mammary and parotid extracts, "Have been employed in the disorders and cachexiae consequent on fibroid tumors, carcinoma of the uterus and certain forms of ovarian diseases." Medulline—Used in locomotor ataxia and similar affections. Medullary glyceride—Extract of red bone marrow. Musculine—Used for muscular effort, in fatigue, etc. Nuclein solution. Oleum animale aethereum —Made from fetid animal oil, (Dippel's animal oil.) Oil of dugong—Obtained from the flesh of the halicore dugong (a fish.) Oil of the skunk. Ovarian extract—"Used in delayed or scanty menstruation." Ovarine—Used in female

diseases, sterility, etc. Pancreatin—Prepared from the pancreas.

Pepsin—Obtained from the stomach of pigs, sheep and calves. Phospho-albumen—"Prepared from the testes, brain and spinal cord of young bulls." Used in neurasthenias. Peptogenic powder. Powdered bone. Peptonized cod-liver-oil and milk. Protonuclein—"It is made from the brain-substance, including the area at the base, corpora quadrigemina, pituitary body, thyroid and thymus glands, salivary and intestinal glands, pancreas and spleen." Pancrobilin—"Is a preparation of pure bile and pancreatic extract." Pano-peptin—Medicine and food. Peptenzyme—"Prepared from the following glands: salivary, peptic, pancreatic, Lieberkuhn's and Bruner's, and the ferment extract of spleens and livers," "used to digest every kind of food." Red bone marrow—Made by Armour & Co. Rennin—From rennet. Spongia—(Or sponge.) Suprarenal capsules, extract of—"Properties haemostatic, astringent, tonic, used in eye, ear, nose and throat work." Sanguiferro—"Is a preparation of iron obtained from the blood of the bullock." Testa—Oyster shell. Tallow. Thyroid extract (gland)—"Used for the treatment of myxoedema, goitre, cretinism, psoriasis, eczema, lupus ichthyosis, pityriasis rubra, universal alopecia, etc." Thymus extract (sweetbread)—"Useful in diseases of defective development, such as pseudo hypertropic paralysis, rachitis, etc. Valuable in exophthalmos, leucocythaemia, chlorosis, and idiopathic and pernicious anaemia." Testicular extract—In sexual and simple neurasthenias. Testine—For nervous prostration, debility, etc. Thyroidine—For obesity, goitre, eczema, etc. Trophonine—"Is prepared from beef, egg-albumen and gluten of wheat." Taka-Diastase—"From a fungus which we cultivate on wheat bran," a valuable remedy in dyspepsia. Urine (human.) Vaccinium—Cow-pox, or modified small-pox.

Having declared the past and present animal products, it now becomes proper to inquire whether ancient and modern ideas bear any relation to each other in the use of these substances. The ancient idea was that the healthy organs and tissues of animals, when employed as medicine or food, would restore similar diseased organs or tissues of the human body to a healthy condition. The same idea exists now, as is evident by the animal products found in our modern list of remedies.

It would seem that we, of to-day, are entertaining the same ideas of the use of animal medicines as those who lived centuries ago. It is sometimes profitable to study ancient history and endeavor to ascertain how much the ancients knew about the arts and sciences. It will do us no harm, but may be a great benefit. In looking carefully ever these animal products used as medicines we exclaim, "ad nauseam" and "throw physic to the dogs. I'll none of it."

THE PHYSICIAN AS A FACTOR IN EDUCATION.

By Frank Overton, A. M., M. D., of Suffolk County.

Dr. Holmes, in his Autocrat papers, says that each individual is a trinity of three distinct personages. First, he is what he thinks himself to be; second, he is what others think him to be; and third, he is what he really is. What medical science actually accomplishes is in marked contrast with the notions which are often held even by educated people. This paper deals with the second person of the Doctor's trinity, or with the opinion which the public has of medical matters. It indicates a few of the many points in which they might be educated by the medical profession with benefit both to the community and to the profession itself.

A little of a man's knowledge comes from reading and study; but by far the greater number of his ideas are derived from conversation with his parents or associates. In other words, the most of each individual's knowledge is as purely traditional as it was in Homer's day. Fifty years ago the science of medicine was crude in its simplicity, and could easily be acquired through a short apprenticeship in a doctor's shop. As in other sciences, what were then professional secrets have now become common knowledge. But many theories which have long since been discredited by the profession still linger in the popular mind and are perpetuated by tradition as parents tell them to their children, and ignorant nurses to their patients. Within a generation medicine has advanced so rapidly that even an educated layman can scarcely follow a modern interpretation of a simple disease. The laity, however, are familiar only

with the medicine of a generation ago, and they are ready to act on their erroneous ideas.

In the treatment of every patient the physician will be plied with questions which indicate the survival of ancient ideas of physiology and pathology. Has he taken cold? Will it lead to fits? Would a plaster draw out the pain? Can't you give something for his blood? Will it do to heal up the sore? Would it not be better to wait for the abscess to open itself? These familiar questions are relics of ancient medical thought, which survive only by tradition. The physician in his hurry and annoyance assents to every question, and thus unwittingly lends his sanction to erroneous and often untruthful impressions. While these antiquated ideas may not directly affect the patient's recovery, they put a conscientious physician in a dilemma. If, for instance, he says that a patient suffering with boils does not have bad blood he loses his reputation as a diagnostician; and if he professes to give a blood medicine he loses his own self-respect. As long as a recent graduate thinks only of the needs of his patients his practice is chiefly in personal economy; but when the struggle for existence compels him to look chiefly after their preferences, he gains a profitable reputation for experience in purifying the blood, opening the pores, drawing out pain and bringing abscesses to a head. This is business, but it does not seem quite professional that we need to deceive the community by our words, even though our diagnoses and prescriptions are scientifically correct.

Along with treatment, patients usually ask concerning the nature of their diseases and the reasons for treatment. It is to our advantage to give them this information, and especially so since it is expected. There need be no fear that in a few moments any one can wrest from us secrets whose acquisition cost us months of close application. Even though some should gain a few practical ideas, sick-

ness will not cease, for human nature is ever the same, and the doctor himself sometimes transgresses the laws of health.

The meaningless diagnosis that the "System is run down," and that a "tonic" will permanently restore it is usually satisfactory to the patient, and profitable to the physician. This belief seems harmless, but it is really only another phase of the fable of the fountain of eternal youth. The public have outgrown these nursery tales, and can now bear the strong meat of science. Let us teach the great principle of self-poisoning from the retention of waste products; show their origin in errors of diet, ventilation and exercise; tell of their expulsion ordinarily through the skin, kidneys, liver and bowels, and in an emergency through the stomach also; give the action of drugs on these organs; and explain nature's remedial measures of refusing food or of rejecting that which is already feeding the poisons. Let us make plain the nature of each infectious disease, and the manner of its transmission; and impress the infectious origin of all "matter" and abscesses, and the necessity of surgical measures in their treatment. It is time that these and similar truths should enter into popular thought.

How shall we instruct our "nervous" patients? The more they know the more fearful they become until it would seem as though any instruction at all would be unpractical. This class of patients are usually intelligent, and talk much about their ailments and the doctor's opinions. Many erroneous impressions are fixed by the innocent deceptions which the physician is almost compelled to practice in order to pacify them. For instance, the popular confidence in "something to quiet the nerves" is perpetuated in this way. These patients are impressed by the personality of a healer rather than by any intrinsic value in his therapeutic measures. Hence they are the willing followers of Christian Scientists, faith curists, advertisers of nostrums, and of any-

one else who has the self assurance to claim unusual powers. Of course, a few are completely relieved, and their positive testimonials outweigh the negative opinions of the hundreds who are duped. If only for our own interest we should explain the scientific principles by which these cures are effected, and that, under other names, they are being applied constantly by every physician with but a small percentage of failures.

Abstract physiology is taught in all public schools; but applied physiology, and the physiology of sickness is learned only from the doctor. No matter what the school books may teach, the doctor's opinions are believed and acted upon. The proper administration of a prescription presupposes a certain amount of knowledge on the part of the attendant. Unless the medical education of the people is up to the times we will be handicapped in our treatment. Both self interest and the public good demand that we should promote the medical education of the public.

THE OPERATIVE TREATMENT OF MYOPIA OF HIGH DEGREE BY THE REMOVAL OF THE CRYSTALLINE LENS.

By Charles Stedman Bull, A. M., M. D.

One of the scourges of modern civilization is myopia or nearsightedness. It may be regarded as one of the hereditary enemies of civilized man. Owing to its early development in childhood, it may be considered as a sort of social plague, for it reaches all ranks of life, and limits the usefulness of the patient in all pursuits. It has become a serious menace to modern education, and so wide-spread has it become that in the near future the condition of the eyes of our children will necessitate some decided modification in the standards for entrance into our higher schools and colleges. This is not the place for any detailed consideration of the subject of modern education, though it is entirely germain to the subject; but a brief plea may be made for an earlier and more careful examination of the eyes of school children, and for a stricter investigation into the whole subject of school-hygiene, including the ventilation and lighting of school rooms, the relative height of desk and seat, the arrangement of blackboards and charts, the length of the study hour, and the frequency of intermissions.

The great danger from myopia lies in the progressive tendency of the disease in many young patients, and the question of operative interference has to do only with the progressive form of hereditary degeneration of the choroid and retina; a myopia complicated not only by progressive posterior staphyloma, but by the development of degenerative changes in the retina and choroid, whether

predisposing or hereditary. The disadvantages of high myopia are very great and are often positively inhibitory of any close work. Patients are rarely able to wear concave glasses stronger than D12 or D14, because of diminution of the retinal images of objects, and the distortion of these images by the lateral rays. Very myopic patients cannot occupy themselves with any close work for any length of time, on account of the physical and ocular fatigue induced by bending over the work, and the continuous strain on the accommodation and convergence. Various suggestions have been made by ophthalmologists in the past to overcome these difficulties. It was at one time supposed that the elongation of the optic axis in myopia was due solely to the pressure of the external ocular muscles on the eyeball, and hence tenotomy of the external recti muscles was advocated. Later *Galczowski* actually proposed to excise a crescentic piece from the cornea, for the purpose of arresting the progress of the myopia. The removal of the lens in high myopia was first proposed by *Beer*, in 1817, who claimed that the condition of these myopic patients was much improved thereby; their vision was increased and their capacity for work improved; and they were protected from the dangers of increasing myopia. *Beer*, however, had no followers, and nothing more was heard of the subject until 1858, when *Mooren* again advocated it. The operation was opposed by *Von Graefe*, because it did not arrest the progress of the myopia, and by *Donders*, who considered the removal of the transparent lens as a punishable offense. The operation again languished until *Fukala* took up the subject of the removal of the lens in 1887, and has continued to be the staunchest advocate of the operation. A very brief résumé of the work done during the last ten years naturally follows.

Fukala's first paper was published in 1890, and was based on nineteen cases, all under twenty-four years of age, and

all could read Jaeger No. 1, at the far point, and showed no disease of the fundus. He first made a small discission of the anterior capsule and repeated this as often as necessary, trusting to the absorptive power of the eye to get rid of the soft lens matter. Subsequently he prefaced the discission by an iridectomy upwards. He claimed the following advantages for the operation: First, distinctness of distant vision; second, enlargement of the retinal images; third, relief from the extreme strain of accommodation; fourth, relief from the disadvantage of bending the head over the work; fifth, restoration of binocular vision for the near-point.

Fukala's next important paper was published in 1894. He omitted the preliminary iridectomy and advised extensive laceration of the anterior capsule, and removed the swollen lens as soon as possible through an incision in the cornea. He considered that young patients promised the best results, and was inclined to limit the operation to patients under forty. He found that the improvement in vision after removal of the lens, varied from two to five times greater than before the operation, and sometimes surpassed this. In some cases there was an arrest in the progress of the myopia. He confirmed our ideas as to the cause of the progressive tendency, viz.: First, the stretching of the ocular coats in consequence of congenital tendency, and second, the unfavorable influence of the accommodation maintained so constantly in young myopes.

Fukala's third important paper appeared in 1897. In it he called attention to the fact that the acuity of vision of an eye depends on three factors: First, the size of the retinal images; second, the intensity of illumination of the latter; third, the perceptive ability of the retina. In comparing the visual acuity with the size of the retinal images, it should be remembered that the latter do not present lines, but surfaces, and hence their superficial contents must be

considered. He endorsed *Schaus's* investigations, who found that the loss of light caused by refraction and reflection is less in eyes from which the lens has been removed, for the eye, by this operation, is reduced to the simplest optical apparatus, having but one refracting surface. This advantage is the more marked if the eye becomes emmetropic by the operation, needing no correcting lens. He considers that the improved sharpness of vision after extraction is due to: First, the increased size of the retinal images; second, increased intensity of illumination of the retina; third, the optical apparatus is simplified and the lenticular reflexes are absent. He therefore claims the following advantages for the operation: First, a varying amount of improved vision for distance, with considerable diminution of refraction. Second, central vision is improved from four to twelve times, caused by the advance ment of the second nodal point, producing an enlargement of the retinal images. Third, the operation does away with the strong convergence of the optic axes and with the inclination of the head forwards for near vision, both of which are strongly causative of increasing myopia. The patient after operation can read and work at a much greater distance from the object, and may even require convex glasses. Fourth, all accommodation is lost, which is one of the factors active in causing increase of the myopia. Fifth, if both eyes are highly myopic and of unequal visual power, the weaker eye developes strabismus divergens in consequence of the disturbed binocular visual act; and here the operation is particularly indicated and often restores the binocular visual act.

Since the publication of *Fukala's* first paper, other observers have taken up the subject, and in the years that have elapsed the number of operators has gradually increased, and now includes among them some men of conservative position and established reputation. They have,

however, been confined almost entirely to Germany and France. The advocates of the operation all claim the same advantages, as follows: The aphakial eye, or the eye deprived of its lens, becomes by the operation either very slightly myopic or else hypermetropic; the retinal images are larger; the eye has greater visual acuity; the far point recedes from the eye; excessive efforts at convergence are suppressed, and the congestive phenomena consequently disappear.

Vacher, the most active advocate of the operation among French ophthalmologists, at first advised it only in those cases in which the visual condition prevented the patients from working, and only in eyes with more than D14 of myopia. Where the myopia was more than D18, he advised operating on both eyes. He at first claimed a satisfactory result in every case, though the visual acuity was not markedly improved. As his experience increased, however, he grew more enthusiastic, and he has become venturesome to an inexcusable degree. He now advises extraction of the transparent lens, without either discission or iridectomy. He regards the operation as a prophylactic against both increase of the myopia and detachment of the retina. He operates on one eye only from preference; and if the patient has only one useful eye, he does not operate. He considers that neither choroidal degeneration nor extreme age of the patient are contra-indications.

Schweigger, a very conservative observer, also favors the operation in cases of more than D16. He does first a discission of the anterior capsule, and then extracts without an iridectomy, which he considers entirely unnecessary. He makes the corneal incision downwards, 2 mm. above the corneal margin, extracts the nucleus and as much soft lens substance as possible, and what lens matter remains behind may safely be left to absorption. He does not think that the acuity of vision is much increased by the operation.

Pflueger corroborates all the advantages claimed by *Fukala*. He does not favor extraction of a senile lens in high myopia. He recommends laceration of the anterior capsule with Bowman's stop-needle, with or without iridectomy, according to the age of the patient. Extraction should follow within a week after the discission. Extensive degeneration of the chorioid in the region of the macula and great age of the patient, both contra-indicate the operation. The younger the patient, the better the prospects. One eye should be operated at a time, and if the swelling of the lens be marked, extraction should be done at once.

Schroeder draws the following conclusions from his somewhat large experience: First, the danger of the operation in otherwise normal myopic eyes is trifling. Second, even with chorio-retinal changes in the fundus, a retinal hemorrhage is only to be feared when the changes are at the macula. Third, the changes in the eye caused by the operation do not increase the dangers to which such eyes are subject, such as detachment of the retina and choroiditis. Fourth, a lessening of these dangers by hindering the increase of the myopia and the development of choroiditis has not been proved.

Von Hippel, another conservative observer, prefers to operate on both eyes, if both are highly myopic. He does not regard choroidal degeneration as a contra-indication. He lacerates the anterior capsule and goes deep into the lens, but takes care not to wound the posterior capsule, so as to void prolapse of the vitreous. He considers iridectomy unnecessary, and never operates on myopia less than D12.

Lagleyze believes that extraction of the lens is indicated in all cases of progressive myopia over D14. He makes a discission and then a simple linear extraction in the cornea. He operates on both eyes if identical conditions exist in

both eyes. Choroidal changes are not a contra-indication unless the macula region is deeply involved.

Wray's views are not entirely favorable. Three objects are to be attained by the operation: First, to enable the patient to work easily at the reading distance. Second, to arrest or prevent degenerative changes in the retina and choroid. Third, to prevent a detachment of the retina. He considers that detachment of the retina is a comparatively frequent mishap after the operation. The latter is to be regarded as a success if it prevents progressive degenerative changes in the fundus and enables the patient to work. Floating opacities in the vitreous and diminished tension would contra-indicate the operation.

Hess is one of the more radical advocates of the operation. He makes a corneal incision upwards with the narrow knife and lacerates the anterior capsule at the same time. He then immediately extracts the lens.

Fröhlich is not a partisan of the operation, because of a number of secondary complications, viz.: First, after discission there may be incarceration of the sphincter margin of the iris in the wound. Second, after linear extraction there is apt to be incarceration of the periphery of the iris and of the lens capsule in the corneal wound. Third, detachment of the retina after secondary operations.

Swanzy is an advocate of the operation in proper cases. He advises a simple discission without extraction, this to be repeated as often as may be necessary, as the method the least likely to be followed by detachment of the retina or intraocular hemorrhage. It is not to be recommended except in myopia of D10 or over, nor in any case where serious lesions of the fundus or vitreous exist. The best period of life is childhood or youth. The advantages to be gained are enormous, while the risks are slight. The acuteness of vision is usually markedly increased, and goes on

improving for several months before reaching the maximum.

Pauss draws the following conclusions based on about five hundred operations: In high progressive myopia above D16, the operation is perfectly justified, provided the visual acuity is sufficient, and provided there are no macular lesions and no amblyopia from strabismus or other cause. The younger the patient the more favorable for the operation. Discission of the anterior capsule followed by simple linear extraction without iridectomy is the best method for young subjects. In adults it is better to do an iridectomy. Atrophic choroidal lesions do not contra-indicate the operation, unless they involve the macula or are accompanied by detachment of the retina.

Otto recommends, first, extensive laceration of the anterior capsule with a sickle-needle. Atropine is then instilled, the eye is bandaged for forty-eight hours, and the patient carefully watched. The iris is kept dilated and there is generally little or no reaction. The swelling of the lens goes on rapidly or slowly, according to the age of the individual. If severe pain and tension come on, warm compresses should be used, but if the symptoms continue, the lens should be extracted. He extracts by means of a bent lance-knife, the wound being made upwards in clear cornea, the lens matter being removed by pressure and counter-pressure. He never uses a spoon. Iridectomy may be avoided in most cases. In children, discission alone generally suffices.

Sattler, another conservative operator, bases his conclusions on ninety-five cases. In no case was the myopia under D12, and most of them varied between D18 and D24. Iridectomy was not done in any case. He uses a hollow lance-knife, makes the wound from 1½ to 2 mm. from the upper corneal margin, and 6-8 mm. long. He opens the capsule horizontally with a sharp hook, and then passes the

hook within the capsule, with its back towards the equator of the lens and posterior capsule, so as to loosen the entire lens substance. He then by pressure and counter pressure removes all the soft lens matter possible. The iris is then replaced. There is very little reaction, and patients are sent home on the seventh day. He claims that by this method of operating, the period of healing is shortened, there is no reaction or irritation, and the resulting astigmatism is trifling and transient.

Hess, Hirschberg and *von Hippel* endorse this extraction without needling and without iridectomy.

Jessop believes that in children and young adults, with high, uncomplicated myopia, the operation should be undertaken because of the great advantages to be gained.

Jackson holds that it is not proper to resort to operation in any case where the progress of the myopia can be arrested by wearing correcting lenses and ordinary hygienic precautions.

Knapp does not approve of removing a transparent lens, for, owing to some of the *cortex* remaining behind, the results will be unsatisfactory from suppuration, or iridocyclitis, or intra-ocular hemorrhage, or detachment of the retina. He thinks that the real value of this treatment of myopia will be recognized when the period of its boom is passed.

This brief résumé of the more important literature of the subject shows that some of the most careful and conservative authorities have become advocates of the operation in selected cases and under certain wise restrictions.

The optical effect of the removal of the lens upon the refraction of the eye is a matter of scientific interest, and in axial myopia may be calculated with sufficient exactness by means of a formula, having first measured the radius of the corneal curvature. The optical results obtained by aid of the extraction of the lens in these cases confirm the gen-

erally admitted fact that the great majority of these cases are due to an elongation of the optic axis. The opinion that the lens plays an important part in causing high myopia, and that it has a greater refractive power than the lens in emmetropia is proved to be erroneous. The amount of reduction in the refraction of an eye by the operation is much greater than would be expected, and is estimated by *Ostwalt* as averaging D16. The ideal effect to be gained from the removal of the lens would be a post-operative myopia of D2 or D3, in which no glass is needed for near work, and even the distant vision is better without glasses than before the operation with strong concave glasses. If a condition of emmetropia results from the operation, the patient will require a moderate convex glass for near-work.

My own experience in operating on cases of high myopia has been extremely limited, and the number of cases is too small from which to draw any conclusions as to the advantages or disadvantages of the operation. But a careful review of the really important publications on the subject, in addition to my own limited experience, may justify perhaps the presentation of some theoretical conclusions.

Before all is it important to carefully examine and study your cases, before deciding upon a serious operation, which is accompanied by the possible occurrence of grave dangers. The actual existing condition of the myopic eye with reference to its seeing power should be definitely settled, and also the fact whether the myopia has recently increased, and to what degree. The age and occupation of the patient, and the necessary demands made upon the eyes should be considered. The possible subjective annoyance caused by the glasses should be noted. A careful ophthalmoscopic examination of the fundus should be made under atropine, with special reference to the condition of the blood vessels of the retina and choroid, particularly in the equatorial region. The meridians of greatest and low-

est refraction should be determined by the ophthalmometer likewise under atropine. A careful examination should be made of the visual field by the perimeter. Finally the tension of the eye should be accurately tested. The intra-ocular tension of a highly myopic eye is apt to be above the normal standard, and a minus tension would cause suspicion of serious disease of the fundus. The possible *dangers* from the operation are four in number and are in the order of their importance and frequency: First, intra-ocular hemorrhage from rupture of a choroidal or retinal vessel; second, detachment of the retina, with or without hemorrhage; third, secondary glaucomatous symptoms, such as increased tension, ciliary injection and pain, all resulting from the swelling of the lens after laceration of the capsule; fourth, infection of the corneal wound or iris, or both. The *third* danger need give us no uneasiness, as the symptoms of increased tension subside immediately by the extraction of the swollen lens. The danger from infection of the wound has been reduced to a minimum by our modern antiseptic surgery, and almost never occurs.

A possible complication is an anterior synechia by adhesion of the iris to the cornea at the point of entrance of the needle in discission, but this should never occur if the iris is kept dilated by atropine. Another possible complication after the extraction of the lens, is an incarceration of the iris in the corneal wound or an actual prolapse of the iris through the wound. This latter is a rare occurrence, and when it happens, the prolapsed iris should be immediately excised.

The conditions which should contra-indicate any operation may be enumerated as follows:

First, extensive degenerative changes in the retina and choroid in the region of the macula lutea; second, detachment of the retina already existing; third, membranous opacities in the vitreous, which indicate more or less ex-

tensive disease of the choroid and of the walls of the blood-vessels; fourth, the previous loss of one eye from whatever cause; fifth, decided loss of transparency of the cornea from previous inflammation; sixth, any form of contagious conjunctivites, particularly trachoma; seventh, advanced age of the patient; eighth, a myopia of less than D12.

Indications for the operation. The indications for the operation are given first by the degree of visual acuity actually existing at the time.

First, If the central vision of the myopic patient, with the best possible correction by glasses, is not sufficient for the needs or social position of the patient, the operation is indicated, first on one eye and then on the other, if there are no contra-indications existing. Second, If there are unmistakable evidences of a rapid increase in the amount of near-sightedness, true progressive myopia, and if the myopia is D 12 or more, the operation may be done, of course under the previously mentioned restrictions.

There seems to be no reasonable doubt that by the removal of the lens, the vision of all myopes is decidedly improved, and this improvement continues for some months after the operation. The results seem to be equally good for all grades of myopia, and the success in complicated cases seems to be relatively as good as in the uncomplicated cases. The wearing of moderato convex glasses after the operation is much less annoying to the patient than the wearing of strong concave glasses before. The age of the patient certainly does influence the duration of the healing process, but not necessarily the final effect of the operation.

The description of the operation forms a fitting termination to the paper. In children it is better to employ general anaesthesia, but in adults the operation may be performed under cocaine. All the steps of the operation are done under the strictest aseptic precautions. The patient's face

is first washed with boiled water and aseptic soap, and then thoroughly cleansed with a solution of bichloride of mercury (1-1000). Towels wrung out in the same solution are then placed around the patient's face and over the hair, until all is covered but the region of the nose and the two eyes. The cornea having been cocainized a speculum is introduced. The conjunctiva over the inferior rectus tendon is then seized by a pair of forceps with blunt teeth, and the eyeball rotated gently downwards. A Bowman's needle or a very slender straight narrow knife is then passed through the cornea about 2mm. from the outer margin and through the pupil, and a free laceration of the capsule is made either horizontally or vertically. If the patient is in middle life or over, a crucial laceration of the capsule should be made, and the needle should also tear apart the superficial layers of the lens. Under no circumstance should the posterior lens capsule be wounded. The needle or knife should then be rapidly withdrawn, and a solution of atropine (2 grs. or 4 grs. to the ounce) be instilled. An aseptic bandage must then close the eye. This bandage should be removed the following morning and atropine again instilled, in order to keep the iris widely dilated. If the lens becomes rapidly swollen by imbibition, the bandage is to be discarded, and the eye kept under the influence of atropia and hot bathing until the symptoms of irritation subside. If the tesion becomes rapidly increased and the symptoms of secondary glaucoma are imminent, the lens must be extracted at once. In the hands of a skillful operator, the narrow cataract knife is to be preferred to the lance knife. Make the incision upwards in clear cornea, exactly as if for the simple extraction of a senile cataract, and about one millimetre from the sclero-corneal margin. Then by gentle pressure and counter pressure, the wound is made to gape, and the soft cortex is pressed out through the wound. Usually the iris prolapses, but this need not interfere with the removal

of the lens substance. By gentle manipulation the soft cortex is pressed out until nearly the entire lens mass is removed. The eye is then washed out with a warm saturated solution of boric acid, the prolapsed iris replaced with a spatula, and a drop or two of a ten per cent. solution of cocaine is instilled. The eye is then bandaged aseptically. I prefer to do this operation with the patient in bed, thus avoiding all jarring by transportation. Unless the patient complains of severe pain, the bandage is not removed for forty-eight hours. It is then taken off, the eye carefully irrigated with a (1-5000) bichloride solution, atropine instilled, and again applied and left for another period of two days. The bandage is then removed, the same irrigation and instillation repeated, and a mask is put over the eyes, nose and cheeks and tied around the head. Should the posterior capsule become opaque, as it sometimes does, no attempt should be made to lacerate it until a period of three months has elapsed. It should then be cut through clearly by a sharp, slender knife, and not torn through by a needle. In this way the danger of a subsequent cyclitis from traction is reduced to a minimum.

DISCUSSION.

Dr. DeLancey Rochester, of Erie county, said that the subject was of great importance because of the prevalence of near-sightedness and its bearings upon social problems. He had been much interested in the paper as presented, and hoped if other oculists were present they would grant the opportunity for discussion.

Dr. J. H. Woodward, of New York county, congratulated the author of the paper on the careful and complete presentation of this subject. He said we do not see so many cases of high myopia in this country as in Europe, hence Dr. Bull's limited experience with this particular operation. A tradition that a clear lens should not be operated upon had been handed down from generation to generation among ophthalmic surgeons. This opinion had gained a great hold, especially in connection with senile cataract. With modern surgical methods the operation was not especially dangerous. Iridocyclitis and suppuration in the eyeball should not occur at the

present time in the hands of any careful operator, and this statement alone should make the general practitioner look upon this operation with more favor.

Dr. Bull, in closing, said that in the last three or four years the journals of the world had been filled with reports of this operation for high myopia, but in the majority of instances nothing had been said about the ultimate results. If there was anything which would lighten the affliction of excessive myopia and partially restore function we should do all we could, under wise restrictions, to popularize it. The tendency was to operate too much, and for that reason emphasis had been laid upon the selection of the operation. It should not be done when there was disease of the fundus of the eye —degeneration of the retina and choroid—for it would inevitably be followed by a retinal intraocular hemorrhage and destruction of the eye. All cases of high myopia had degenerative changes, in both retina and choroid, and that was one reason why such persons saw so imperfectly even with corrective lenses. But if these changes were elsewhere than at the macula they did not necessarily contra-indicate this operation, if the degree of myopia were high enough.

With regard to the operation itself it should never be done in one time and one motion. The younger the patient, the better the results, but even an age of fifty or sixty need not be a contra-indication. There should be first a laceration of the anterior capsule.

After the lens had swollen, if the patient were young, one might trust to the absorptive power of the individual and interfere no further; but if this were not sufficient extraction might be performed and the glaucomatous symptoms at once made to disappear.

THE THIRD INTERNATIONAL CONGRESS OF GYNECOLOGY AND OBSTETRICS.

By A. Palmer Dudley, M. D., of New York County.

I desire to give you my impressions respecting the practice of gynecology abroad, which I gathered from the reports and papers read at the International Congress of Gynecology and Obstetrics held in Amsterdam in August of this year. When I promised this report I little knew the difficulties to be met through my being unfamiliar with the languages of the Congress. I shall therefore seek to give you an idea of the general trend of thought, leaving you to judge of the results accomplished.

The International Congress of Gynecology and Obstetrics is the outcome of the desire of a few eminent specialists, the principal of whom was Dr. Jacobs of Brussels, for an organization for the purpose of bringing together eminent men from all parts of the globe for an interchange of ideas on and the advancement of these branches of medicine. The organization meets triennially and, so far as possible, its members are government delegates. So far, I believe, the success of this undertaking has been satisfactory to those attending. That petty jealousies and ill-feelings might enter here, as in all other societies, was to be expected; but the work of the Congress as a whole compares favorably with that of any other similar scientific body, and I believe that with encouragement it will in the future be looked upon with pride by the profession of every country. The meeting of August last at Amsterdam was the third, the first having taken place at Brussels and the second at Geneva.

The Congress opened on August 8th in the halls of the University, President Treub of Amsterdam in the chair, with an attendance of nearly two hundred members. Many nations were represented, the largest delegation being from France. Germany was not represented to any extent for reasons I will touch upon later. The official languages of the Congress were French, German, and English. One of the prettiest features of the Congress was the series of short addresses of welcome by President Treub in the following languages: French, German, English, Italian, Spanish, and Dutch, one right after another—a time in my life when I felt my ignorance most keenly.

The forenoon of the first day was devoted to a discussion of miscellaneous subjects.

M. F. Jouin (Paris). "Nouveau traitement palliatif du cancer de l'uterus."

M. A. Goldspohn (Chicago). "Indications, technique, and results of the Alexander operation in aseptic adherent retroversions of the uterus, when combined with inguinal coeliotomy to liberate the organs and to resect or remove the adnexae when necessary."

M. O. Engström (Helsingfors). "Uber Sarkome des Beckenzellgewebes."

M. C. H. Straatz (The Hague). "Kolpotomia posterior lateralis."

M. A. Palmer Dudley (New York). "Intra-uterine implantation of the ovary."

M. Gouillioud (Lyon). "Du pincement des artères uterine dans les fibromes."

M. Gouillioud (Lyon). "D'une cause d'obstruction intestinale speciale aux fibromes utérins."

M. M. Chaleix Vivie (Bordeaux). "Innocuite de l'amputation anaplastique du col en ce qui concerne la grossesses et les accouchement ultérieurs (observations personalles)."

M. Tournay (Bruxelles). "Hystérectomie totale pour fibromyomes, technique operatoire."

M. F. Villar (Bordeaux). "De l'appendicite chex la femme."

M. Bowreman Jessett (London). "On uterine myoma."

M. Schmeltz (Nice). "Traitement chirurgical rationnel du cancer du sein."

————. "Du l'application en gynécologie de l'air surchauffé avec présentation du thérmo-insufflateur du docteur Schmëlt."

————. "Nouveau procédé d'hystérectomie abdominale."

M. Casentino (Cattania). "Sezioni di uteri congelati di gravide, parturienti e puerpere."

M. Tuffier (Paris). "L'hystérectomie dans l'infection puerpérale aigue."

M. Guermonprez (Lille). "Un cas de myoméctomie pour un myome de 2,500 grammes, avec photographie de la tumeur enlevée."

M. G. Ruggi (Bologna). "Simpatectomia parziale abdominale come cura di alcuni lesioni muliebri."

The afternoon session was given up to a general discussion upon the surgical treatment of fibroid tumors of the uterus, a subject exhaustively handled by such men as Engstrom (Helsingfors), Jacobs (Brussels), Pozzi (Paris), Jessett (London), Villar (Bordeaux), Heywood Smith (London), Elder (Nottingham), Doyen (Paris), Calderini (Bologne), and Caromilas (Athens).

The social functions of the Congress began on the evening of the first day with a banquet given by the ladies of Amsterdam—a most delightful affair, I was told, and one which at least two men were exceedingly sorry to miss, your humble servant being one of the two, owing to detention of our trunks on the border because we had neglected to declare that we had no cigars or whiskey aboard.

The second day's work was devoted during the morning hours to a discussion of general topics, as follows:

M. Charles G. Cumston (Boston). "La technique de l'antisepsie et de l'asepsie en chirurgie gynécologique."

M. H. Delagénière (le Mans). "Du raccourcissement des ligaments larges et des ligaments ronds dans la rétroversion de l'uterus."

M. P. Poirier (Paris). "Des hypertrophies lymphatique dans les tumeurs de l'uterus et des ovaries."

M. Bouilly (Paris). "La voie vaginale dans le traitement des affections annexielles."

M. Doyen (Paris). "Traitement des fistules gynecologiques spontanees et post-operatoires."

M. D. La Place (Philadelphia). Demonstration of a forceps for intestinal anastomosis.

M. C. E. Schwartz (Paris). "Note sur les sarcomes angio-plastique du vagin."

M. P. Reynier (Paris). "Hystérectomie abdominale totale dans le cancer uterin."

M. T. More Madden (Dublin). "On the treatment of cancer of the uterus."

M. G. Heinricius (Helsingfors). "Uber die klinische Bedeutung der Retrodeviationen des Uterus."

M. Ziegenspeck (München). "Meine Stenonsen-operation."

M. Jonnesco (Bucharest). "La castration abdominale totale dans les affections, septique ou non, des annexes."

M. Boisseau Du Rocher (Paris). "Diagnostic precoce du cancer."

The afternoon session was taken up by a thorough discussion upon the relative value of antisepsis and perfection of technique in the actual results of operative gynecology, by Reynier (Paris), MacNaughton Jones (London), Alexander (Liverpool), Bell (Glasgow), Hartmann (Paris), Keiffer (Brussels), Byers (Belfast), Straatz (The Hague), Jonnesco (Bucharest), Elder (Nottingham), Bantock (London), Doyen (Paris), Van der Veer (New York), and Jacobs (Brussels).

A summing up of this discussion indicates that the gynegologists of the world are striving to secure as perfect aseptic conditions and technique as possible in the performance of all gynecological operations. I must say that so far as I am able to learn, nothing in advance of our own work in this country was made evident. The discussion was heated and at times excited, and the efforts of many of those who participated were masterly. I wish particularly to refer to the remarks of Pinard (Paris), Richelot (Paris), Doyen (Paris), and La Torre (Rome).

The evening of the second day was devoted to the grand banquet given to the Congress by the Gynecological Society of the Netherlands—a magnificent affair presided over by the Queen's representative, she being out of town. She remembered the occasion with a courteous telegram of congratulation.

On the third day the morning session was devoted to papers upon general subjects.

Mlle. Van Tussenbroek (Amsterdam). "Ovarian pregnancy."

M. Dumont-Leloir (Tourcoing). "Étude sur la position à la Walcher avec épreuves radiographique."

M. Edward P. Davis (Philadelphia). "The management of labor in abnormal pelves."

M. F. La Torre (Rome). "Della nomenclatura dei diametri obliqui del bacino dal punto di vista ostetrico internazionale."

M. F. La Torre (Rome). "Della classificazione morfologica dei bacini viziati."

M. Ch. Porak (Paris). "De l'omphalotropsie."

M. A. Favre (Chaux-de-Fonds). "Accouchement et néphrite."

M. Chambrelent (Bordeaux). "Du sulfate de chinine chez les femmes enceintes."

Mlle. Felicia Mendelssohn (le Caire). "Sur un cas de nérvosisme pendant la grossesse."

M. Beuttner (Geneva). "Experimentelle Untersuchungen über Castrationsatrophie."

————. "L'emploi de la salipyrine dans la gynécologie."

M. Sherwood Dunn. "Gynecological surgery in the treatment of nervous diseases in women."

M. E. Doumer (Lille). "Sur l'emploi des courants de haute fréquences en gynécologie."

M. J. L. Faure (Paris). "L'hystérectomie abdominale totale dans les suppurations annexielles."

M. H. Duret (Lille). "De la colpohystérectomie dans le traitement de l'inversion utérine irreductible."

M. Ch. Fournel (Paris). "Démonstration d'un nouveau porte-aiguille."

M. Desnos (Paris). "Cystites douloureuses chez la femme en rapport avec les affections utérines."

The afternoon session was devoted to a discussion on the influence of position on the shape and dimensions of the pelvis. The greater part of the day was given up to obstetrical subjects, and the evening to private dinners.

The fourth day was devoted exclusively to a discussion of the surgical treatment of fibroids of the uterus.

Doyen and Schuuta read papers on the subject and the general discussion was taken part in by the following: Baldy (Philadelphia), Delagénière (le Mans), Edebohls (New York), Reynier (Paris), Van der Veer (New York), Herman (London), Alexander (Liverpool), Carstens (Detroit), Tournel (Paris), Bell (Glasgow), Bland Sutton (London), La Torre

(Rome), Byers (Belfast), Giles (London), Cushing (Washington), Vineberg (New York), Villiers (Paris), Duret (Lille), Hartmann (Paris), Keiffer (Bruxelles), Galvani (Athens), Leon (Amsterdam), Jonnesco (Bucharest), Engstrom (Helsingfors), Jacobs (Bruxelles), Pozzi (Paris), Jessett (London), Heywood Smith (London), and Heinricius (Bruxelles).

Men differed in their opinions, as we all do, respecting the different methods of procedure and various routes of approach, but the consensus of opinion was in favor of the abdominal operation for the removal of uterine fibroids. Nothing new was elicited from this discussion except the combined opinion of the best men of the world respecting the methods of approach and the ultimate results of the surgical treatment of this condition.

The morning of the fifth day was occupied by papers on various subjects, and the afternoon session with discussion on the indications for Caesarian section compared with those for symphysiotomy, craniotomy, and premature induction of labor. This was taken part in by Giles (London), Delotte (Limoges), Latschko (Vienna), Byers (Belfast), Bossi (Genoa), Nijhoff (Groningue), Straatz (The Hague), Meyer (Copenhagen), Calderini (Bologne), Caromilas (Athens), Engelmann (Boston), Heinricius (Helsingfors), and Parve (The Hague). Papers on the subject were read by Barnes, Leopold, Pinard, and Pestalozza.

This was followed by a seance of cinematographical surgery by Doyen, of which I shall have further occasion to speak.

On the morning of the sixth day Treub read a paper on antisepsis in symphysiotomy and Cesarean section, which was discussed by Pinard and Queirel. Chaleix read a paper on amputation of the cervix; Rapin on insufflation of the uterus, (?) La Torre on a classification of the positions of the foetus, and Queirel on *urologie* (?) of pregnancy.

Respecting the non-appearance of the Germans I have only to say that it was due to some personal ill-feeling between the president of the Congress, Prof. Treub, and the Germans, over which the Congress had no jurisdiction and in which it took no part. As a body, we heartily regretted the absence from the Congress of old friends (through no fault of our own) whom we anticipated the pleasure of meeting again after a lapse of three years. We sincerely hope that our German members and friends will soon see that personal matters with individual members should not be allowed by them to interfere with their desire for the success of a scientific body such as is the International Congress of Gynecology and Obstetrics, and that they will join us at the next triennial meeting of the Congress, wherever it may be held, and bring with them the good-fellowship for which they are so well known.

Concerning the seance previously spoken of under the head of cinematographical surgery, I can only express my displeasure. A machine that can represent an abdominal hysterectomy as having been done from start to finish within the space of six minutes can only represent a fraud, and it is needless to say that no intelligent operator in surgery could be for a moment deceived by it. One of our delegates saw fit to exploit such a procedure before the Congress to the satisfaction of a few and the disgust of many, especially those who saw him operate later and who know the mortality that has already followed in the wake of his performances in surgery. We have a few men in this country to my personal knowledge who delight in "playing to the gallery," but so far as I know we have not anything in this country which will equal the charlatanism of such an exhibition. I was told upon good authority that cinematographical pictures of such surgery are upon exhibition in the streets of a great city in Europe. I was also informed that this gentleman proposes to come to America

with his exhibition. If he does, I hope he will receive the reception he deserves.

The matter of the place of meeting of the next Congress was left to a committee composed of founders. Invitations were received from Barcelona, Bucharest, London, and Washington. The American delegation, although hoping that the Congress would come here, voted solidly for it to meet at Barcelona if it would not come to us. A committee of five was appointed to arrange for representation of this country at the next Congress, of which Dr. Engelmann of Boston was made chairman and myself secretary. The work of this committee will be published from time to time in the columns of one of the medical journals. Those who desire to prepare themselves for a visit to the next Congress will be aided by me in so far as lies within my power.

PROGRESS OF THE SCIENCE AND ART OF OBSTETRICS.

By Florence O. Donohue, M. D., Syracuse, N. Y.

It has been well said that the obstetric art appeals to the sympathies and to the most sacred instincts, beyond any of the branches of medicine; childbirth is not uncommonly regarded as a simple physiological process, painful, but with rare exceptions natural and safe, and as a matter of fact this is incorrect. The conclusion of an able investigator, Dr. Mathews Duncan, made in 1870 was that one in one hundred and twenty women died in childbirth. With regard to the causes, they are various of course. A considerable number lose their lives annually from hemorrhage, as in *placenta praevia* and from convulsions, but by far the larger proportion up to that time did not die from accidental complications. The most reliable statistics go to show that 65 or 75 per cent. of all the deaths was caused by puerperal fever. The first important measure for the relief of the parturient woman was the discovery of the obstetric forceps. This instrument is acknowledged by all to be the most useful and life-saving appliance ever invented. Yet science waited sixteen centuries after the Christian era for its discovery. 'Tis true many modifications of the original instrument have been made, yet barring the pelvic curve, which was added by Smellie, the principle embodied in the first instrument of the Chamberlains obtains in them all—that of artificial hands to be applied without injury to the foetal head.

In reviewing the obstetrical field, it is pleasant to speak of the wonderful advances made by the discovery of anesthetics as contrasted with the horrors of the days before

these great agents. Chloroform and ether have changed the world of obstetric surgery more than any other remedial agent. While the honor of the discovery of anesthetics is due to our countryman, it remained a chemical curiosity until by the energy and genius of Simpson of Edinburgh, than whom few have done more for the science of obstetrics chloroform was first applied for the purpose of inducing unconsciousness and facilitating delivery. It is like mercy; it blesses the physician as well as the patient, and with its aid operations which the ancients shunned with superstitious awe are done with impunity. Some wise man has said, "It is not the man who first says a thing that deserves the credit, but he who says it so long and so loud that at last he pursuades the world it is true."

If careful statistics were compiled now, I am confident that the mortality from childbirth would be found very much reduced from what it was when Mathews Duncan wrote. There are doubtless more factors than one in the production of favorable results. Some of these are the earlier use of the forceps in tedious labor, the more frequent induction of premature labor in cases of contracted pelves, the better treatment of eclampsia and the improved treatment, prophylactic and actual, of post-partum haemorrhage. But the greatest gain, pre-eminent above all others in the reduction of mortality, was the discovery and partial development of the principles of antiseptics, and in proportion to the recognition of the part played by germs in the development of disease and to the success of efforts to exclude them, will be gained the increasing improvement for which we hope, in the death rate from childbirth.

The puerperal woman is in a condition wholly different from that of any other patient. Her very blood is different in chemical constitution from the blood of any other human being. The very germs which are so disastrous to her, might be and often are placed in direct contact with wounds

in other patients without harm. Recent reports from the Dresden lying-in hospital show that what was true forty years ago is true to-day, for we are told that in 1886 there were admitted seventy-eight patients on whom from the rapidity of labor no examinations were required. Under such circumstances douching after delivery was omitted, yet all these cases made an absolutely normal recovery.

It was the observation of facts like these among other things that led Semmelweiss to his great discovery; until his time the theories held as to the cause of puerperal fever were of the vaguest kind. He appears to have been really the first to regard it as the result of wound infection, and as a process identical with pyaemia. Indeed he laid it down as a fever produced by the absorption from the inner surface of the uterus and mucous lining of the genital tract of decomposed animal matter generated in the patient herself or conveyed to her by unwashed hands or instruments. Some time about 1847, when the immortal Semmelweiss was interne in the great lying-in hospital of Vienna, assistant to Professor Klein, the mortality from puerperal fever was something frightful, reaching to fifty or seventy per thousand. He noticed that the women who were delivered before reaching the hospital escaped; he further noticed that all protracted cases to which the students had free access terminated fatally. About this time a friend of his died from a dissection wound, the symptoms of whose illness were like those of the puerperal cases. He soon set forth his views, which, like those of all great innovators, were met with great opposition. It is said that his mind gave way because of the bitter opposition which his views encountered. He became an object of dislike and ridicule, but he accomplished a great work. He was the first to explain the true nature of puerperal fever. We are all familiar with the analogy which Sir James Simpson of Edinburgh described about this period, between the stump after

amputation and the internal surface of the uterus after parturition. He described the analogy between surgical and puerperal fever. Evidently the minds of these two great men ran in about the same groove at about the same period. The one died an object of ridicule, the other has to his memory a bust in Westminster Abbey with England's illustrious dead, being the only physician whose memory has thus been honored.

Semmelweiss's life was really a short one, for born in 1818, he died in 1865 at the early age of forty-seven, but short as was his life, his energy and genius accomplished much. The evil effects produced by the contact of dead animal matter with the genitals of the lying-in woman conveyed on the fingers of students or medical men from the dissecting-room were clearly recognized by him, and we find him in 1847 recommending that the hands of all who had to do with the lying-in room be thoroughly washed with disinfectants. By this means he was able greatly to reduce the mortality in his wards. Not only did he recognize the poisonous character of putrid animal matter, but he likewise regarded the living secretions, under certain circumstances, capable of producing puerperal fever. But little attention appears to have been paid to his theories, although their truth we are now bound to acknowledge.

Semmelweiss was certainly in advance of his time, and this led ultimately to his withdrawal from Vienna to his native city of Pesth in Hungary. During his six years superintendence of St. Rochus hospital in that city, only eight deaths occurred from puerperal fever in nine hundred and thirty-three deliveries. His prophylactic measures against the occurrence of puerperal fever consisted as far as possible by means at his command, in hindering the entrance of decomposing material from without, in preventing internal decompositions and in removing at once any product of these decompositions.

In some measure we may say therefore without in the least detracting from the honors so deservedly due to Lister, that Semmelweiss anticipated some of the antiseptic methods of that distinguished surgeon. The greatest of all scourges to the lying-in room is now, thanks be to Semmelweiss, stamped out, although it required forty years for the profession to accept the dictum. Formerly small-pox destroyed one in six of all the people in civilized countries. When the discovery that has made it nearly harmless was announced, the people and the doctors with them hooted at the pretensions of the great Jenner. It required half a century for the people to get so far as to tolerate one of the greatest boons bestowed by science. The famous Harvey, who demonstrated the circulation of the blood, was pointed out as a visionary and lost his practice. In this way the world resents any disturbance of the well-adjusted equilibrium of time-honored ignorance.

Semmelweiss's declaration that he had discovered the cause of the mortality in the lying-in hospital at Vienna encountered such a storm of hostile criticism among his professional brethren as to cause his actual retirement, and now we find Lister knighted by Queen Victoria thirty-five years later for applying the very same principles to surgery which Semmelweiss advocated in midwifery. Semmelweiss, it is true, did not know there was a microbe. Every phase of his discovery was empirical. It was the same with all great discoveries in former times. The Spaniards learned from the natives of Peru that fevers could be cured by drinking the water around which grew the cinchona trees and it is likely these ponds were simply solutions of quinine. It is the great part of science to give us reasons for what we already know. Other physicians are adding constantly to the benefits that science has bestowed upon mankind and some great ones have made immortal additions to the agencies with which disease is fought. But

there is no name on the roll of obstetric physicians that will surpass Semmelweiss, as there was no disease more deadly than that his measures assail, and what is already proven shows that his remedy surpassed in effectiveness all hitherto essayed.

Of all branches of medicine I think I can justly claim for midwifery that it is to-day further advanced toward scientific perfection than any other department of medicine. Admitted it is, that in a large proportion of cases the duties of the physician are perfunctory, and he is an idle spectator on physiological laws, but with our modern civilization pathological conditions are not uncommon and it would seem the higher the civilization the greater the difficulties.

Women whose time is devoted to intellectual pursuits or those whose aim it is to be leaders in so-called fashionable society are in the very nature of things ill-prepared for the duties and trials of maternity. Their physical organizations are debilitated from irregularities and excesses and their progeny is prone to inherit some physical infirmity. It is well known that those mothers low in the social scale, dissipated in their habits, the ill-fed, poorly nourished, among unsanitary surroundings are very prolific in giving birth to rachitic monstrosities. It is among these classes, the extremes of civilization, that the physician meets the greater number of dystocias, often well-nigh exhausting his skill and taxing his resources to the utmost.

A large part of the province of midwifery has to do with questions of mechanics and is readily open to demonstration and observation. While surgery has made rapid strides during the past decade, nevertheless I think it may be safely said that midwifery has fully kept pace with it. The most notable recent advancement has taken place with regard to Caesarian section. About six years ago the mortality from this operation was estimated between 70 and 90 per cent. It even appeared that its mortality increased as

time went on. Comparatively few cases were successful in the hands of skillful operators. Now, the improved Caesarian section shows a mortality of 9 per cent. This success is not due to the skill of one operation, but of a series of operations by different obstetricians. The success of the operation is due to the labors of Sanger in adopting Lembert's intestinal suture for the uterine wound. Verily in a short time great changes are wrought. It is not long since the profession believed that the principle of placing sutures in the uterus was wrong, arguing that by reason of its contractile powers it would writhe itself free from any sutures which could be applied. The results of these operations somewhat justify the claim that craniotomy should be abolished as a murderous procedure and Caesarian section substituted. In this operation continental Europe will probably always take the lead, because of the greater frequency of contracted pelves in that country, and because of the religious teachings which prevail there, foetal life rather as against the risk taken by the mother having been regarded.

The working classes or wage earners in this country have better food and live under better hygienic conditions than in Europe, and it is largely to these facts we owe our comparatively limited experience in pelvic deformities. Foreign literature is painfully rich in this department, and we have no desire to rival them. When the human race attains such a degree of perfection that there shall be no deformities, obstetric surgery will have a narrow field for action.

Within the past ten years, symphysiotomy has been revived by some obstetricians, under the stimulus given by Morisiani of Naples, who reported at the International Medical Congress in London in 1881, a marked success in a series of cases under his personal observation whereby he was able to save the lives of 41 children and 40 mothers in a series of 50 operations. Widely varying opinions are still

held, however, as to the status of this operation in obstetric procedures.

The more frequent induction of premature labor in cases of contracted pelves offers a better solution of the problem. This operation is practically free from danger, so far as the mother is concerned and after the period of viability has been reached the child also has a chance for existence. Tyler Smith says that craniotomy is performed once in three hundred and forty labors in British practice. I am of the opinion that American obstetricians are not called upon as frequently to perform this operation. There are cases in which the operation is justifiable and proper. When the child is undoubtedly dead the physician could have no scruples but to effect delivery in the safest possible manner for the mother.

The object of the obstetric art is to deliver living children from living mothers. To attain this is the goal for which obstetricians should strive, and science in this respect is striding towards the fulfillment of the dictates of humanity; that it will achieve all that humanity longs for may be doubted. We cannot, however, sanction the idea of finality in this department of medicine.

DISCUSSION.

Dr. William E. Swan, of Saratoga county, said that it was well known that the nature of puerperal infection varied in different cases; sometimes it was the staphylococcus, and sometimes the streptococcus. Not more than six months ago it had been discovered that puerperal infection was sometimes due to a mixed infection—even sometimes the result of the coincident action of the typhoid bacillus. It seemed rational, therefore, that the nature of the infection should be determined by making a culture and subjecting it to bacteriological examination. If an infection were due to the streptococcus it would be found that the process penetrated very deeply—very often into the broad ligaments and beyond the reach of any curette. This was in marked contrast with the nature of the staphyloccoccus infection, and afforded an important guide to treatment. In connection with the work of Semmelweiss, he had

been pleased to see in Vienna a statue of Semmelweiss, illustrating the fact that the true worth of men was often not recognized until after their death.

Regarding Caesarian section for contracted pelvis, the speaker said this was the operation in favor in Germany. A prominent German operator advocated the external treatment of the stump in patients whose vital forces had been very much reduced, as in this way the system was rid of a great deal of material the elimination of which would have otherwise taxed the already weakened powers. In the light of modern knowledge of puerperal fever the physician should abstain, as far as possible, from making vaginal examinations. In his opinion, it was possible, in most cases, to properly conduct a labor without making more than one such examination. The same care should be taken, prior to making it, as in the preparation for a surgical operation. He recommended not only thorough sterilization of the hands and maternal parts, but the wearing of a rubber glove on the examining hand.

Dr. William E. Finder, of Troy, thought it was far better to begin the treatment of puerperal fever at once and make the cultures afterward. There was nothing known which would stop the growth of such germs. Of course, it was still better to so conduct confinements as to make the occurrence of puerperal infection impossible. In an experience extending over many years he had yet to meet with the first case of puerperal infection for which he was himself responsible. Even in the humblest abodes soap could be obtained, and if there was doubt about the condition of the examiner's finger-nails the soap could be used to fill up the subungual space.

Dr. Henry Risch, of Kings county, said that it was generally assumed that the physician was responsible for the infection, but this was not always the case. There was a possibility of infection from infected air. For this reason he advocated making a vaginal examination with one finger, thus allowing the labia to hug the finger closely. The chances of puerperal infection could also be reduced by manipulations having for their object the prevention of lacerations of the perineum.

SOME PRACTICAL EXPERIENCE IN ASEPSIS AND ANTISEPSIS IN OBSTETRICS.

By Douglas Ayres, M. D., of Montgomery County.

So much is known at the present time of asepsis and antisepsis, and its great value in all surgical procedures, that I am frequently led to ask myself the question, Do I and do the profession generally exercise the same care in technique in obstetrical work that we do in other branches? Do we when called upon to attend a woman in labor, make the same careful preparation, and follow it in the spirit and the letter, that we would in the simplest case of minor surgery? Do we, especially those of us who practice in country places, and even those in our larger villages and cities, in the hurry, and with the cares of active life, always think to prepare as to our garments, to our bodies after attendance upon certain cases, which I will mention later, to our hands and arms, before we begin work. Even though fully alive to their importance does not the excitement of the hurried call frequently divert the mind from them—and do we always remember to instruct those who are left in charge of the patient in the attentions that are so necessary for her comfort and safety. It is well I think to present this subject at intervals that each of us may offer his own experience in these procedures which are of so much importance to every woman who is about to be delivered. The vast amount of research of patient work in the great field of bacteriology has placed aseptic and antiseptic work in this department upon as scientific a foundation as that of any other in surgery, and with such care as we all know how to exercise—with ordinarily favorable surroundings

we have but slight fear of septic inoculation. The late Dr. Irish found by careful search of the records of the Health Department of New York city, for a period of nine years from 1868 to 1877 that the whole number of deaths were 248,533, that of these 3,342 were from diseases—complicating pregnancy, from accidents of child bearing or from diseases of the puerperal state or that one and seventy-five one-hundredths of all deaths occurring during that period was the result of what we regard as a normal, natural function. Of these, 1,947 cases were reported of puerperal fever, puerperal peritonitis, metro-peritonitis, phlebitis, pyaemia and septicaemia. He says "if we apply the general term puerperal fever to this class of cases it will be seen that the malady is the cause of nearly one, one hundred and twenty-seventh of all the deaths occurring in the city. The actual number of births for the nine years was estimated at 284,000. The total number of deaths to the whole number of confinements was in proportion of one and eighty-five hundredths or from puerperal fever alone in the proportion of one and forty-six thousandths. Max Boehr makes it appear in his statistics that one-thirtieth of all married women in Prussia die in childbed. A commission appointed by the "Berlin Society of Obstetrics and Gynecology" reported that from ten to fifteen per cent. of the deaths occurring in women during the period of sexual activity was due to childbed fever. These statistics show clearly the importance of close attention to all the conditions that might lead up to and culminate in septic inoculation. In all cases of confinement we should request that the external genitals be washed with soap and water, followed by a solution of corrosive sublimate or carbolic acid. Before examination we should remove the coat, bare the arms, wash hands and arms thoroughly with soap and water, clean the nails and follow with a solution of carbolic

acid or bichloride in which hands and arms are immersed. It is always the better plan to make as few examinations as possible to determine fully the presentation and position and whether labor progresses normally. If it be necessary to use instruments great care should be taken in making them perfectly sterile—they should be prepared as carefully as we would prepare our instruments for general surgical work. I say this not as an intimation that all of us are not fully up to all that pertains to asepsis and antisepsis but as a reminder that may serve to keep us in the proper course to place us upon our guard at all times as to these conditions. Careful washing and sterilization of all instruments as soon as possible after using them is always of importance. If we pack them up hurriedly after we have finished our work and carry them to our offices, it is well to charge the mind with this so that it may be done as soon as the opportunity offers. I find that two sets of canton flannel, or drilling wraps, with tapes fastened upon them to hold the instruments in place are very convenient for carrying, as one can be laundered while the other is in use. Our garments, also the hair of both head and face, should receive careful attention, especially after having been in attendance upon any of the acute infectious diseases, elements from which might by inoculation cause sepsis. We are frequently in attendance upon those sick with the eruptive fevers, especially scarlet fever, upon diphtheria, upon erysipelas, ulcerations of all kinds, and occasionally make a post-mortem examination, the latter of which should never be done when an expected case of confinement is near at hand, but if the case is pressed upon us, the greatest care as to complete change of garments and thorough sterilization of the body should be taken. Remembering that labor is a physiological function, sepsis means fault in procedure, means that poison has been introduced, means that it has been brought about by external means. In a word na-

ture is not at fault, but the fault rests with the attendants. A physician living a few miles from me came to my office some time since, and in the course of our conversation said "I feel like refusing all cases of confinement for the present, for during the last two months I have had four cases of puerperal fever. I am positively afraid to attend another case." I replied, "There is some fault in your technique, doctor, in your preparation aseptic and antiseptic for the work. Have you been very thorough?" "I think I have," he said, "but I might have been more so." "Are you attending any cases from which you might have carried the infectious element?" "I do not think of any." "Kindly think over all your cases. Have you any of the eruptive fevers, diphtheria, wounds of any kind or ulcers?" "Nothing of the first," he replied, "but I have a case of varicose ulcers of the leg, an old lady. I have been in the habit of dressing them every two or three days." "To that case, doctor, I think the origin of your trouble can be attributed. You probably inoculated the first patient by some fault in your procedure and the other from both sources. As a little leaven leaveneth the whole so the slightest amount of this subtile poison will inoculate a great number, I would advise you not to take another case until you have ceased your attendance upon these and the case mentioned for at least two weeks, then follow a thorough aseptic and antiseptic course for the whole body and change the clothing." He followed my advice and reported that he had no further trouble. But it is not the physician alone—many of our nurses, especially those in the country, are not trained, and we must train them. We should know who is engaged—if she is not a trained nurse, we should find out her occupation, and impress upon her the great danger in going to the patient without the most thorough aseptic and antiseptic preparation of her person and clothing. We should place the means in her possession and give her written directions as

to their use. Asepsis is not sufficient; we should provide her with antiseptics and our directions should be to wash and disinfect herself as thoroughly as in the case of ourselves. After our preparation we should be very particular as to our lubricant. The vaseline of the household is a very fruitful source of infection. It may have been used many times by various members of the family and for various infectious sores, and is usually left open, and is simply a receptacle for micro-organisms and should be wholly discarded, unless it be a fresh package. Creolin has been very highly recommended and is a very good lubricant and antiseptic. If necessary to catheterize the patient after delivery, a glass catheter may be left with the nurse with the most careful directions as to the proper means of sterilizing it and the great importance of repeating the process each time before using it. The same antiseptic precautions should be taken after delivery, keeping the body and external genitals perfectly clean with soap and water, and antiseptics, is first in order. Small pads of sterilized cloth may be prepared by the nurse, and saturated with the antiseptic, placed over the external genitals and held in place with a fillet prepared in the same manner, and changed several times daily. I do not advise any form of vaginal douche after a perfectly normal labor, and normal condition of the lochia. It has been quite conclusively proven that the lochia are not particularly septic, that the secretions of the part will protect from any ordinary septic influence, that nature has provided a means in the secretion of these glands of destroying what of bacteria may obtain after a normal labor, and that there is therefore no indication for the use of the douche.

Recent bacteriologic study has been very close and exhaustive as to the lochia. Dödeslieu, Winter, Steffel and others have found pathogenic micrococci, especially the staphylococcus albus, and Krönig has found the streptococ-

cus most frequently. It is his opinion that the vagina of every untouched pregnant woman is aseptic, containing nothing pathogenic, excepting the thrush or gonococcus germ. Gow demonstrated the following statement before the obstetrical Society of London, Jan. 13th, 1894: "The vagina secretes a whitish and opaque fluid resembling in appearance thick starch-mucilage, the opacity being due to the presence of numerous flat nucleolated cells. Chemically the fluid is albuminous in nature and there is no evidence of the presence of mucin; the reaction is acid, but the fluid when secreted is alkaline. The acidity depends upon the presence of bacteria, which are not, however, pathogenic." Stroganoff states that the vagina constitutes an unfavorable locality for pathogenic microbes, particularly for the staphylococcus and the streptococcus; the action of the secretion of the habitual (nonpathogenic) vaginal microbes aids in this means of defence of the organism. The cervix likewise is unfavorable to the development of the pathogenic microbes, but the question of the normal vaginal flora is still unanswered. The bacteria that are most commonly found in the vagina are the bacillus vaginae, which produces the lactic acid of the vaginal secretion and the septic staphylococcus. Menge, in the "Lancet" of April, 1895, reports a series of observations as to the bactericidal properties of the vaginal secretions in non-pregnant women, and has demonstrated the fact that in 44 out of 150 women there were no pyogenic-microörganisms either at the fundus or the introitus vaginae. He next proceeded to investigate the fate of such germs where introduced experimentally. On 35 women he made 23 experiments with bacillus pyocyaneus, 30 with staphylococcus pyogenes and 27 with streptococcus. The result was the same in all cases; after a varying period the vagina was found to be free, and the question as to whether the vaginal secretion was acid or alkaline did not affect the result.

I offer the suggestions of this paper for the purpose of keeping this subject before us, that we may continue to improve our technique in the lying-in chamber—that each one of us may instruct carefully in every case those who nurse the patient, and that we may be prepared to give advice to those of our professional brethren who may not be fully convinced of the great importance of these procedures, and by so doing we may save to home and society many a valuable life and emphasize our worth as physicians, and above all, have the satisfaction of doing good.

REPORT OF A CASE OF PUERPERAL SEPSIS AND WHAT IT TEACHES.

By Charles H. Glidden, M. D., of Herkimer County.

The patient, Mrs. A., aged thirty-two, was delivered in October, 1897, of a well developed child weighing ten pounds. (Presentation L. O. A.) Labor was uneventful and uncomplicated. A drachm of Squibbs Fl. Ext. Ergot was given and the placenta was expelled by aid of moderate expression in about thirty minutes. Good uterine contraction occurred and about an average bleeding from the placental site. No evidence of retained clots or secundines was noticed at this time nor thereafter.

The patient's health prior to her labor seemed excellent. Previous examination had revealed a normal condition of the kidneys and favorable position of the foetus in utero. She was a farmer's wife, and although inured to hard work, had performed an extraordinary amount of labor during the two or three weeks preceding her illness.

Coming of sturdy "Mohawk Dutch" stock, she was possessed of an iron constitution and splendid physical strength, though in stature only of medium size.

On the night of labor, having plenty of leisure time after arrival at the house, it was possible to make careful preparation to secure asceptic conditions. A quantity of water was sterilized and receptacles scrubbed and cleansed for containing it. Plenty of soap and water were used in washing examining hand and external genitals. No precaution was omitted and more than usual thoroughness was observed preliminary to making the few examinations necessary. Examining hand was frequently soaked in hot bichloride solutions, as were also the external genitals. Hav-

ing in the absence of a nurse personally attended to these matters, both before and immediately after labor, any error in technic must be laid at my door.

At this point it may be stated that the sanitary condition of the surroundings was much the same as we find in most rural homes. They are briefly though unscientifically described in the following quotation: "Gods own people, man's own back door, and the devil's own privy." The sewerage of the kitchen was disposed of in an open box in the corner of the room, which discharged its contents into a surface drain without. The privy vault, connected with the kitchen by a covered passageway, was located close up to the foundation of the house. In other respects the house was arranged as suited the convenience of the builder and not at all for the comfort or health of those who dwelt therein.

On the morning following labor an unskilled and uneducated woman was procured to take charge of my patient, according to the custom largely in vogue in country districts. How well she did her work cannot be stated, nor is it possible to affirm that she is in anyway responsible, either by acts of omission or commission, for the results which followed.

The third day, October 12, while on the way to make my last visit prior to starting for the "97" meeting of this Association, the husband, driving rapidly, met me and stated that his wife was not doing well, which upon investigation proved to be no exaggeration. She had been suddenly seized that morning with sharp pains in the precordial region, accompanied by dyspnoea, a feeling of suffocation, and a sense of impending death. Her own description of the attack was very graphic and her face still bore the pale, anxious appearance following great fear and decided shock. There had been no rigor nor any feeling of chilliness. The temperature was 102°, pulse 120, respira-

tion accelerated. Further examination revealed a distended abdomen, somewhat offensive and scanty lochial discharge, uterus enlarged and sensitive to touch, but freely movable, its mucus lining roughened, and a dirty discharge followed the examining finger from the os.

Septic infection and endometritis were suspected and means were at once taken to prevent further infection. The cavity of the uterus was thoroughly washed with a solution of bichloride of mercury, one to five thousand, and this repeated at eight hour intervals. Bowels were immediately purged by calomel and salines. Sustaining and stimulating measures were also adopted at once. After two days all the conditions remaining unchanged, the curette was carefully but thoroughly used, removing nothing but shreds of necrotic tissue. Following this the uterus was washed at four hour intervals and nourishment, stimulants and heart tonics were pushed to the limit as indicated. Two trained nurses were secured as soon as the severity of the case became apparent, and a battle royal was waged between the voracious streptococci and the reserve forces of the patient. The temperature ranged from 102 to 106, pulse and respiration correspondingly high. There was enormous distension of the abdomen and great quantities of gas were discharged per rectum. Busy delirium and marked subsultus were almost constant.

At the end of a week a second curettage was resorted to and this time the sharp curette was employed. Lysol was substituted for the bichloride as an antiseptic and is recommended because of its lubricating qualities, a matter of some importance in frequent intra-uterine douching. The intervals of douching were again increased to eight hours at this time.

On the eighth day ten c.c. of antistreptococcic serum, obtained from Dr. D. H. Buxton, of this city, was injected hypodermatically, with not the slightest effect so far as we

could observe. The condition of profound systemic poisoning or pyaemia remained unchanged. No abatement of the unfavorable symptoms resulted, either from the serum or the intra-uterine douchings or the curette and it seemed indeed a hopeless case at the end of the second week. As an evidence of the extremely critical condition of the patient at this time, it may be stated that one of the nurses finding the patient could not swallow, aroused the family in the early morning, announced that there was no hope and advised them to bid the patient good-bye. (Decidedly reprehensible conduct on the part of the nurse.)

Up to this time, no distinct localized tumefaction of the pelvic tissue had been found though careful search had been made, but as a desperate chance and without much hope of a favorable issue an incision was made in Douglas' cul-de-sac and exploration with the finger far up in the connectine tissue behind the uterus. About three ounces of serum, bloody and probably containing some pus, was discharged. This opening was kept patent, and the cavity thus formed, as well as the cavity of the uterus, was washed daily and loosely packed with wicks of gauze. Steady improvement was manifest from this time until convalescence was established. (Once this new cavity was thoroughly curetted, so persistent were the indications of reinfection.)

Six times during her illness full ether anaesthesia was necessary, and much of the time two nurses were required night and day. One of the attending physicians remained eighteen nights at the house and a portion of the days as well, so tremendous seemed the risk and so slight the thread holding her life. A full quart of whiskey was administered during one day of twenty-four hours, and from that amount to half a pint was given daily. Sixty ounces of milk was the daily average amount, varied from time to time by other liquid foods. Temperature and delirium were controlled by the ice cap and cold packs. Strychnia and spartein, digitalis

and strophanthus were all used at various times, as well as morphia and hyoscyamin as indicated. On several occasions the excellent effects of large quantities of normal salt solution, injected high into the colon, were observed. The insertion of the long rectal tube for this purpose also served to facilitate the escape of enormous quantities of gas from the distended bowel.

Convalescence was established at about the end of the fourth week. Daily dressing of the sinus was maintained until it closed at the end of the eighth week. No local ill effects remained. The uterus is freely movable and in other respects health seems to have been fully restored.

The favorable outcome in this case may be attributed:

1. To the sustaining treatment. The administration of alcoholic stimulants can hardly be overdone and the restorative effect of the saline solution given at an opportune moment, is certainly remarkable.

2. To the excellent nursing. Only the most asiduous and unremitting care will bring success.

3. Drainage from the genital canal and later from the sinus in the pelvic connective tissue. It is not always possible to find evidence of small accumulations to pus. In the absence of other evident causes for the persistent systemic infection, it is probably good surgery to make an exploratory incision and through it carefully go over the whole pelvic region. In other words, it is quite safe to say that if after repeated irrigation and curetting the uterus, no improvement is noted, you should suspect that the pathogenic organisms have invaded deeper tissues or organs, as the pelvic connective tissue, or that of the broad ligaments, the tubes or ovaries, the parenchyma of the uterus, the peritoneum, the lympatics or veins.

The exact diagnosis in any given case of sepsis is a matter of prime importance. The term "puerperal fever" is quite general and indefinite as to the lesion or nidus. Any pur-

tion of the genital canal may be the point of attack and the local manifestations as well as the symptoms, prognosis and treatment will differ accordingly.

Conditions may also vary according to the particular variety of bacteria present. In the case reported, instead of streptococci, the staphylococci or colon bacilli may have been present and hence no result from antistreptococcic serum could be expected.

It is not within the scope of this paper to deal with the prophylactic methods in Obstetric practice. The last word however has not been said on this subject. Preventive methods will not be complete when Obstetricians have attained perfection in aseptic technic. We shall still have to consider the environment of the patient and the education of the laity.

Generations yet unborn will have the same lessons to learn. It is a heavy burden for the general practitioner, but at present he must bear the sole responsibility in this warfare against the ubiquitous bacteria. Our best endeavors may be thwarted by the dirty habits of the patient, by the meddlesome attention of friends or by unskilled nurses. We would not underestimate the tremendous responsibility resting upon the physician, but it is going too far to say that in every case of puerperal sepsis he is the sole " particeps criminis," or even that he is the chief among germ bearers or distributors.

By demonstrating correct methods and so reducing the mortality, the present day lying-in hospital and the modern nurse help to solve the problem of aseptic midwifery.

An apology is perhaps due for presenting a case which according to some authorities ought to have been prevented, but " let him that is without guilt cast the first stone." As long as the poor and middle class of women must be confined in their own homes, with limited conveniences and unskilled nursing, just so long will we have septic cases, and

they are not necessarily reflections upon the methods of the average practitioner. The world must be peopled in accordance with Divine command and it happens at the end of the eighteenth century that this command is being obeyed chiefly by those who can least afford the luxuries of a well-arranged lying-in chamber. Therefore, the time seems well spent in considering the management of puerperal sepsis from the curative as well as the preventive standpoint.

HYDRORRHOEA GRAVIDARUM AND HYDROSALPINX.

By Dr. F. Stanley Cowles, of New York County.

I wish to call your attention under the above heading to the possibility of an hydrosalpinx or a pyosalpinx succeeding, or perhaps coexisting with, attacks of Hydrorrhoea Gravidarum.

Two such cases have come to my immediate notice, and I have notes of similar cases in the practice of other physicians. The first case was one seen in consultation; the patient had four or five attacks of Hydrorrhoea during her first pregnancy—the last attack brought on a miscarriage at about the sixth month. She had some sepsis following the miscarriage and later developed a pyosalpinx—which was aspirated, and finally operated, the patient recovering.

The second case is one in my own practice and as it presents some unique features is reported in detail:

Case—A woman, 25 years old, married, two children. In November of 1894 I removed with a curette a small piece of placenta from a septic endometrium, the result of a three and one-half months miscarriage. Eight months later, July, 1895, I was called and found the following: She was six months pregnant, and feared another miscarriage. She had been having some rather severe, recurrent pains in the uterus for about an hour; suddenly felt something give way (as she expressed it), and a large amount of water escaped from the vagina, enough to saturate the bed and her clothing. There had been no discharge of blood and the pains ceased after the escape of the fluid.

A digital examination revealed an inflamed condition of the right vaginal fornix, and a slightly prolapsed ovary; the foetus was freely movable in what seemed plenty of amniotic fluid, allowing ballottment to be easily performed. I kept her in bed, and as she subsequently had several similar attacks I was able to diagnose it Hydrorrhoea Gravidarum. The attacks were always ushered in by

painful contractions of the uterus and the fluid always escaped with a gush and in considerable amount—estimated by the patient to be a pint or more.

She was delivered at term in October of 1895 of a healthy child, her own condition being excellent. One night in the following December I was called, and found her suffering very severe pain, her facies anxious, a pulse of 110 and temperature 102.5. The pain had started around the umbilicus, radiating into the chest, but on my arrival it was greatest in the right iliac region. The pain had come suddenly, quickly increased in severity and was growing unbearable. The abdomen was very tender, Tympanitic, and there was a perceptible swelling in the right groin. There was a spot of extreme tenderness a little below the umbilical line and near the crest of the Ilium. She was vomiting when I arrived. Careful deep pressure revealed the presence of an enlargement and considerable induration about the tender spot. In the country such conditions put the physician upon the anxious seat, so I telephoned at once to a surgeon. He arrived next morning, finding her condition much improved—better pulse, lower temperature, less pain; an ice bag had been applied to the side and the bowels moved by calomel and salines. He agreed that the attack was appendicitis, and owing to the amelioration of symptoms and the lack of good operative conditions advised waiting. At my afternoon call found the pain had increased, was more colicky in character and situated more in the hypogastric region, and she said to me: "Do you know, doctor, if you had not told me I would have no more of those hydrorrhoea attacks after confinement. I should think I was going to have some more water come away." A few moments afterwards, during a more than usually severe pain, quite a large amount of water escaped from the vagina, and she had the satisfaction of saying: "I told you so."

I immediately examined her, per vagina, and found an highly inflamed right vaginal fornix, numerous adhesions, tender ligaments, a swollen, hot and tender Fallopian tube; the uterus slightly enlarged, and somewhat tender, more so on the right side than on the left. The tenderness and swelling which had been so plain upon the abdomen had disappeared, and the patient made a prompt recovery from her appendicitis (?). Subsequently, she frequently had similar attacks; for a time they recurred once every month, about a week before the menstrual period. A year and a half after the first confinement she became pregnant again, and the attacks of Hydrorrhoea persisted up to delivery at term; and they have recurred, with gradually decreasing frequency every since. The attacks have never seemed to have any marked effect upon the patient's general health, nor have they discommoded her for more than a day or two

at a time. She suffers little more than ordinary at menstrual epochs, but is a more than ordinarily healthy woman otherwise. The last attack occurred about two months ago, she having passed through six months without having had an attack.

I report this case to invite discussion upon one or two points: First. Concerning the pathological anatomy of an Hydrorrhoea Gravidarum.

It has always been considered due to an abnormal discharge of the uterine glands, the fluid accumulating slowly until in sufficient amount to set up uterine contractions which lead to its discharge: or it may gradually escape without causing any pain. While it may not be judicious to accept the symptomatology of one or two cases as pathognomonic of the pathological conditions existing in cases with similar symptoms, yet one may gain some information by discussing possibilities. Considering the septic condition in which the uterus in this case had been prior to the first conception and the persistence of the attacks of watery discharge after delivery, I think the discharge from the first was more liable to be from the glands of the Fallopian tube, and that a Hydrosalpingitis existed during the pregnancy. At any rate there was an extension of the inflammatory action to the Fallopian tube either during pregnancy or subsequently, which is a point worth considering, as an hydrorrhoea gravidarum is supposed to cease at confinement.

Hydrorrhoea Gravidarum is not an infrequent disease, I believe it is more common than we think. The cases of supposed escape of amniotic fluid prior to confinement, either of a large amount of fluid at one time, or of a gradual dribbling, are probably cases of Hydrorrhoea Gravidarum. The disease, as you are aware, is not very serious. The principal danger is that contractions of the uterus may be set up during the discharge of the water, and cause premature delivery. Hydrosalpinx and especially pyosalpinx, on the other hand, are much more serious conditions; they

are very apt to follow septic conditions of the endometrium, especially after gonorhoea or septic abortions; and, as such conditions are always favorable for developing an hydrorrhoea during the next pregnancy, we should be on the lookout for every suspicious case such as supposed escape of amniotic fluid before confinement, for developing tubal inflammation.

Secondly. The differential diagnosis of inflammatory conditions existing in the right Iliac region in women. Of the diseases more or less referable to this location which might require carefulness in differentiation I might mention—aside from diseases of the uterus, Fallopian tube, and ovary and extra uterine pregnancy, etc., common to women—hip joint disease, typhoid, fever, pelvic haematocele and lumbar abscess; typhilitis, perityphilitis, intussusception, especially ileo-caecal, volvulus, hernia, impaction of faeces or foreign bodies, movable kidney that has settled and become inflamed behind the caecum, floating kidney, etc.; also hepatic and nephritic colic, enterocolitis, acute perforating ulcer of the stomach or duodenum; perforation of the ileum caecum or gall bladder, cholocystitis, etc.; and lastly what I wish to especially consider in connection with this case of Hydrosalpinx—Appendicitis.

The attack above described and many which followed it presented symptoms which I believe would have led others as well as myself to diagnose appendicitis. Take the symptoms—radiating pain at first about the umbilicus and over the abdomen, gradually locating its greatest severity in the right Iliac region; a spot of extreme tenderness, with swelling, induration and evident tumor formation almost exactly at McBurney's spot—a little above rather than below. Nausea, vomiting and rise of temperature, all developing suddenly in a healthy woman—the combination proved too tempting for me. Although appendicitis occurs four times as often in men, the cases in my practice which necessitated

operation have occurred oftenest in woman—three to one. I never had a consulting surgeon ask to make a vaginal examination in diagnosing the case. The patients were operated from symptoms and abdominal signs. Since this case I have asked a great many surgeons prominent in abdominal work if they made a routine practice of examining per vagina in supposed cases of appendicitis and they all answered that they did not think it necessary except in very obscure cases.

I have often been surprised, in my talks with intelligent people outside the medical fraternity, at the array of testimony which they bring to bear against operating in appendicitis. The lay mind of to-day is stored with histories of operated cases where the appendix was not diseased where the patient was no better after operation—the attacks recurring—fatal cases that (according to their judgment) might better have been left unoperated, etc. Interested friends are always eager to quote these items to the afflicted one or his family, but the physician in attendance is generally kept in ignorance of all this valuable information and advice.

The position of the surgeon with everything at his command for the safety of his patient is quite tenable. "Appendicitis, etc., are surgical diseases; always operate as soon as you have made a diagnosis, etc." Indeed it looks now as though we would soon be in a position to advise the removal of the appendix of infants as a prophylactic measure, just as we now advise vaccination, antitoxins, etc.

But the men in general practice outside the cities, many of whom are efficient surgeons, but with meagre facilities for operating, have their troubles—they realize more and more fully how little reliance is to be placed upon the symptomatology of such diseases as appendicitis—the present condition of affairs may look much different in another hour even; and the question they have to confront in every case

is: "Considering the lack of even antiseptic surroundings, how long dare I wait before advising operation."

Considering these facts I wish to state as my opinion that the surgeon who operates or advises operation for appendicitis in a woman without a thorough exploration of the pelvic cavity by vaginal and rectal touch is guilty at least of negligence. If this were done as a matter of routine there might be less reason for the popular cry of "Too much knife."

And this brings me home again to my own case of hydrosalpinx from which that ever enticing siren Appendicitis has allured me. So far I have refrained from operating. The attacks have gradually grown much less frequent; from two or three times a month at first, she has lately gone six months without an attack.

The only treatment employed has been counter irritation to the vaginal vault with Churchill's Tincture, a few Icthyol Tampons, and the systematic employment by the patient of copious hot water douches.

As the fluid always escapes from the vagina soon after the onset of the pain, I am convinced that the ovarian end of the tube has become closed by inflammatory deposits. I presume, however, that there is some danger of rupture of the tube during an attack; I am aware that conservatism is sometimes akin to cowardice, but the condition of the patient has hardly seemed to me to warrant a laparotomy.

DISCUSSION.

Dr. F. W. Higgins, of Cortland county, said he had had cases in which he felt like recommending operation. Cases had also come back to him from specialists, and they had all led him to think less of the "educated finger." He was well aware that operations were sometimes demanded, but, unfortunately, it was difficult to distinguish between these and those in which such interference might, at least, be postponed for a time. It would be well if physicians generally would watch these doubtful cases and not be in too much of a hurry about recommending operation.

Dr. H. O. Marcy, of Boston, said that within a year, after having made a careful diagnosis of what he thought to be appendicitis, he had removed a Fallopian tube. A few days later he had made a diagnosis of disease of the Fallopian tube, and found an inflamed appendix. The great point was to decide, not the exact pathological condition, but whether it demanded operation. Our diagnosis should give the patient the largest measure of safety. In doubtful cases we should exhaust all possible means of diagnosis before deciding, not neglecting to make an internal examination in female subjects.

Dr. H. Risch, of Kings county, remarked that hydrorrhoea gravidarum was of different varieties. The chief point to decide was whether the fluid was intra-amniotic or extra-amniotic. If the former, then the child should be delivered as soon as possible after viability. It was often difficult, however, to decide this fine point. If intra-amniotic one would expect a constant flow, but it was, nevertheless, sometimes intermittent.

A BRIEF SUMMARY OF THE INDICATIONS FOR OPERATIONS UPON THE STOMACH.

By Max Einhorn, M. D., New York County.

To-day, the majority of real cures among patients with digestive ailments are due firstly to a more thorough knowledge of their nature, secondly to the use of more appropriate treatment (dietetic, medicinal and mechanical) and thirdly to operative intervention.

Operations upon the stomach, although rare in olden times, have been performed during the last twenty or thirty years with increasing frequency. These operations serve to remove disorders which cannot otherwise be successfully treated. They are, therefore, not antagonistic to the medical plan of treatment but, on the contrary, in harmony with it and supplementary to it.

Among the many surgeons who have advanced the surgery of the stomach in America I may mention the following: Robert F. Weir, N. Senn, W. T. Bull, Joseph D. Bryant, Robert F. Abbe, F. Lange, Charles McBurney, Willy Meyer, McCosh, A. Gerster, F. Kammerer, Roswell Park, Murphy, and last, but not least, W. W. Keen. While these operations, so distinctly beneficial in suitable cases, are sometimes not given due consideration, they are occasionally performed where contraindicated and for this reason it appears to me timely to broach the subject of the indications for operations upon the stomach.

The operative procedures are the following: Gastrotomy; gastrostomy; measures to facilitate the outflow of chyme from the stomach (pyloroplasty, divulsion of the pylorus, gastroenterostomy); resection of part or of the entire organ; gastrolysis; gastroplication; gastropexy. It will be best to

briefly review each operation separately and state in what conditions it should be undertaken.

Gastrotomy (simple incision followed by immediate closure of the stomach) is done, firstly and principally for the purpose of removing foreign bodies which may have been swallowed or have formed in the stomach. The operation is indicated.

First. If the swallowed body is irregular with sharp edges, which may injure the tissues.

Second. If it is too large to pass through the pylorus and at the same time gives rise to pains, nausea, vomiting, etc.

Third. In rare instances, in order to examine the interior of the stomach with reference to the presence of malignant superficial neoplasms, ulcers, or of ruptured blood vessels in profuse hemorrhages.

Gastrostomy (establishment of a new opening or gastric fistula) is performed in cases in which the passage of food and liquids from the mouth to the stomach is arrested or rendered difficult, Gastrostomy should be resorted to: First. In all cases of malignant disease of the oesophagus including the cardia as soon as dysphagia appears. Second. In cases in which inoperable tumors (struma, aneurysms, intrathoracic growths) compress the oesophagus to such a degree that even liquid food cannot be taken in sufficient quantity to maintain a bare subsistence. Third. In benign strictures of the oesophagus in which all attempts to dilate by way of mouth have failed. In this group after gastrostomy, the retrograde dilatation of the stricture by way of the new gastric opening will often be successful. After the latter has been efficiently done, the gastric fistula may again be closed. Fourth. In cases of idiopathic dilatation of the oesophagus a gastric fistula may be temporarily established in order to introduce food directly and thus give the oesophagus a chance to recuperate and contract. This, however, is not an absolute indication, as the same method of

treatment can be carried out by nourishing the patient through a tube, introduced by way of mouth; by this method the oesophagus is at rest, as the food does not come in contact with it.

Measures to facilitate the outflow of chyme from the stomach: Divulsion of the Pylorus; Pyloroplasty; Gastroenterostomy. These operations are done in all cases in which the outflow from the pylorus is permanently retarded to such a degree that ischochymia results. In as much as these conditions are quite frequent and their management of much importance it may be well to dwell on this subject.

The outflow through the pylorus may be impaired by the following agencies: First. Narrowing of the lumen of the pylorus by benign strictures, by idiopathic hypertrophy or by malignant tumors. Second. By spasmodic contraction of the pylorus in consequence of an ulcer in its immediate neighborhood. Third. Excessive dilatation of the stomach with radically impaired function of its muscular apparatus. It is quite evident that pyloroplasty or divulsion of the pylorus will come into consideration only in the benign form of group I. (benign stricture and hyperthrophy of the pylorus), while the remainder of the groups enumerated demand gastroenterostomy as the only feasible operation. Divulsion of the pylorus has not been practised within recent years, as recurrences of the stricture have often followed the procedure. Although pyloroplasty is an ideal operation—since it creates anew an almost normal condition of the stomach and restores its function—it is not frequently practised. The conditions suitable for pyloroplasty are not numerous (only benign stricture and not too excessive hypertrophy of the pylorus) and even here it can be replaced by gastroenterostomy. This is the gastric operation which is practised more often than any other. It is the only operation practicable in malignant diseases involving the pylorus, in ulcer in the

neighborhood or within this orifice, and finally in extreme atonic dilation of the stomach.

Resection of part of the stomach or excision of the entire organ is performed in cases of malignant disease. The indication to remove malignant growths by surgical intervention is always present, but unfortunately not always feasible or possible. Cases adapted for partial resection of the stomach are those in which the tumor is confined to a certain part of the stomach, is quite circumscribed and has not as yet involved the adjacent organs. If the pylorus is affected, a pylorectomy is done with the performance of either a duodenogastrostomy or a plain gastroenterostomy after suturing the stomach and duodenum separately. A diffuse carcimoma extending over the entire surface of the stomach but sharply terminating at the cardia and pylorus, may be removed by excision of the entire stomach and the performance of an oesophagoduodenostomy, provided there be no cancerous deposits in other organs nor adhesions of the growth to contiguous parts.

Gastrolysis, or loosening of adhesions from the stomach, is performed either in connection with other operations, or in cases in which they cause persistent marked pains and when their existence is recognized by distinct symptoms or after an exploratory laparotomy.

Gastroplication, folding and suturing the stomach walls to each other, has been advocated by Bircher and Weir in cases of dilatation of this organ. The operation may be indicated in excessive dilatation of the stomach without the presence of a stricture.

Gastropexy, suturing or fastening the stomach to the upper part of the abdominal wall, has been suggested by Duret as a remedy for gastroptosis and also Glénard's disease. From my own experience I must say that I have not as yet met a case of enteroptosis requiring such an operation.

Having discussed the indications for operations upon the stomach in a general way, it may be of interest to go a little more into detail with regard to surgical intervention for relieving ischochymia. For, numerically, it is for the latter condition that more than half of all the operations upon the stomach are performed.

From a clinical standpoint the large group of ischochymia must be divided into two classes: firstly cases of ischochymia due to benign processes (ulcer near or within the pylorus, cicatricial stenosis of the pylorus, idiopathic hypertrophy of the pylorus, extreme dilatation of the stomach due to atony of its muscular layer), and secondly, cases due to malignant diseases of the stomach (cancer of the pylorus and also of the stomach). The benign form of ischochymia often shows a tendency to amelioration, especially if the stenosis is not too far advanced, and a rational dietetic treatment is crowned with good results. For this reason, we should not be hasty in advocating surgical intervention. We should first try all the rational non-surgical methods of treatment at our command and only, when they absolutely fail and the ischochymia persists even on a liquid food diet, we should urgently recommend an operation. For, if the latter be omitted in the conditions just mentioned, a fatal issue will sooner or later occur. The operation should also be recommended in cases in which the attacks of ischochymia are repeated or where an ulcer with considerable hemorrhage has preceded the existing trouble, and the patient is quite emaciated. The reason surgical intervention cannot as yet be advised in all cases of more or less permanent ischochymia, is the high mortality following operation. In cases of ischochymia due to benign processes occuring in my practice and operated by the best surgeons of the city, there were six deaths in twenty cases, a mortality of 30 per cent. In Czerny's clinic the mortality of all operations upon the stomach gave the average of 16 per

cent. Thus the mortality of these operations (gastroenterostomy or pyloroplasty) being so high we cannot advocate them unless the conditon is incompatible with life.

Ischochymia resulting from malignant disease of the stomach and more especially of the pylorus cannot be materially improved by medical treatment. In most instances the ischochymia progresses and increases the suffering and hastens death. Operation is the only rational way of treating this group. Even the great mortality should not deter us. For these patients are beyond help, and we must use all feasible methods of alleviating their suffering and prolonging life. As soon as the diagnosis of cancer of the stomach can be positively made and there is a concomitant ischochymia, an operation (gastroenterostomy and perhaps also excision of the growth) should be performed without any further delay in every case.

In conclusion I beg to submit the following propositions:

1. Operations upon the stomach for malignant disease should be performed as early as possible.

2. In benign affections, operations upon the stomach should be performed when all other curative means have been tried and have failed to relieve.

DISCUSSION.

Dr. DeLancey Rochester, of Erie county, said that in cases of malignant disease of the pylorus he believed operation should be done as quickly as possible. In cases of benign obstruction at the pylorus the ordinary mechanical and medical measures should be tried for a certain not too great length of time. Even if there were slight improvement after two months of persistent treatment he would seriously consider operation. In a large number of cases it was difficult to determine whether the growth was or was not malignant. From his own experience it seemed that operation should not be deferred in cases in which only a probability of malignant disease had been established. Where there was malignant obstruction at the pylorus he would ordinarily advise gastro-enterostomy. Pyloric divulsion should never be done, as it never produces more than a slight temporary improvement. At times pyloroplasty will do more for our patient than a gastro-enterostomy.

Dr. W. E. Finder, of Rensselaer county, said that since the recent work on the stomach proved that this organ bore operation well, it seemed to him proper to resort to early operation. Dr. J. B. Harvie, of Troy, had removed the entire stomach for a malignant growth six months ago, and the patient was still well. The same operator had also done the Swiss modification of the operation of Senn. The speaker said he had a number of times assisted in clearing up a doubtful diagnosis by exploratory incision, and the patients had not been harmed thereby. In 1886 he had reported to this association a peculiar case of foreign body in the stomach; he had always regretted that he had not been allowed to operate. Now, with the aid of the X-rays, and particularly after coating the substance with subnitrate of bismuth, one was able to make satisfactory diagnoses. If these means were insufficient the surgeon would do no harm by exploratory incision.

Dr. F. W. Higgins, of Cortland county, said he understood that the great cause of death in operations on the spleen was the injury done to the great plexus of the sympathetic. In view of this he would like to ask whether Dr. Einhorn had found that death had been due to shock, and had occurred within twenty-four hours after operation, or whether it had apparently resulted from some defect in the technique.

Dr. Einhorn replied that none of his cases with benign disease of the stomach had died within twenty-four hours after operation; most of them had succumbed a week or two later. Only one had died within three or four days, and in that case death had apparently resulted from a toxic condition present before operation. He was not opposed to operating in stomach diseases, but had simply expressed his regret that the results from such operations were not better. Certainly the mortality was still very high—one-fourth succumbing—and, hence, he favored going slowly in the matter of advising operation. Of course, in cases of malignant disease, operation was the only chance of life, and hence the operation should be done as early as possible. The question of diagnosis had not entered into his paper

THE VALUE OF OPERATIVE TREATMENT IN SPINA BIFIDA, WITH THE DESCRIPTION OF A NEW METHOD OF CLOSING THE CLEFT IN THE SPINE.

By W. B. Reid, M. D., of Oneida County

Owing to the limited number of recorded cases and a popular prejudice against the radical operative treatment in Spina Bifida, the following case seems of sufficient interest to report: In this class of cases the course pursued seems worthy of trial, and as it has never been described in text, we lay claim to the originality of the method.

The case when coming into my hands presented the following history:

Kenneth H., aged one year. First child. Parents both healthy. Family history fair. No other deformities in the family to the knowledge of the mother.

General Appearance.

Color of the skin, fair and healthy, well nourished. Flesh firm and hard. Examinations of the head, trunk and extremities showed them to be normal and well developed. Situated at the lower end of the spinal column was a tumor the size of a very large orange. It was constricted about the base, flared toward the top, giving a balloon-like appearance. Over the top the skin had become thin and translucent, showing its contents to be of a light straw color. The surface was uniform with no furrowing or dimpling. Closer examination of the constriction showed it to cover the space corresponding to the posterior arches of the second, third and fourth lumbar vertebrae. Gentle tapping

on the tumor gave the impulse in the anterior fontanelle. On lowering the head and raising the feet, the tumor decreased somewhat and there appeared a bulging of the anterior fontanelle showing the two communicated. Let me state that this is a sign given by some authorities, as a contra-indication for operative treatment, but as the subsequent history of this case will show, it is not absolute.

By recalling the history and considering the following points, the positive diagnosis of a spina bifida was made. To be brief, these were: The tumor was congenital; its central position; apparent communication with anterior fontanelle; the translucent appearance, confirming supposition of fluid contents; at the base of the tumor, the bony margin of the opening in the spinal canal could be felt.

The question as regards the variety with which we have to deal is often a difficult one to settle. Whether we have to deal with fluid and the membranes of the cord, a meningocele, or whether the tumor contains a portion of the cord, a meningo-myelocele. The third variety, the syringo-myelia, where the cord is dilated to form the cavity of the sac, is very rare and is associated with such other grave deformities, that the child seldom lives to present any question for the surgeon to determine. Because of the uniform appearance of the sac, and from the absence of any furrow which is associated with the meningo-myelocele, I suspected that we had to deal with a tumor of the first variety. By taking the patient in a dark room and transmitting a strong pencil of light through the tumor, the question was positively determined. This was accomplished by the use of the electroscope. I present the instrument for your inspection. As you see, it contains a small incandescent lamp. Over this fits a collar containing a strong convex lense, which intensifies the light. Over this, and joining on the handle, is a hard rubber tube, in the end of which is a mirror placed at the correct angle to throw the light down

the speculum. This is of hard rubber and collects the whole volume of light into about the size of a small lead pencil. By means of this strong point of light, a thorough examination of the contents of the tumor was made. From the absence of any cord or band like obstructions which would have shown a shadow, we knew the contents were fluid and that we were dealing with a meningocele. Because of the rapid thinning of the sac and the subsequent danger of immediate death, either from shock or sepsis, it was decided to operate at once.

The Operation and its Technique.

The same rigid rules of asepsis were observed as for a laparotomy. We began by withdrawing nine ounces of the fluid daily for three consecutive days, so as to lessen the chances of shock from the sudden release of pressure on the brain and cord when we should dissect out the sac and excise it. The aspirations were made with the ordinary syringe. During the gradual withdrawal of the fluid, the preparations for the incision were made. These were the same, both constitutionally and locally as for an abdominal section. On the third day the sac had become quite loose and flabby, so that portions could be lifted with the tissue forceps. Under chloroform, an elliptical incision was made on either side of the centre in the thicker portions of the skin where the structures had lost none of their original form. The sac having been dissected out, was excised close to the pedicle, the edges stitched together with fine catgut, step by step with each successive incision. Just before closing the last portion of suturing, the hips were elevated to bring as much fluid as possible in the brain cavity, the sponges withdrawn and the last stitches inserted. A second row of stitches were then placed over the first, turning the raw surfaces in, each stitch being placed as far as

possible to correspond to the inter space in the first row of stitches.

By careful trimming and stitching, the stump was made to form a nice plug which was pushed snugly into the opening. A Volkmann spoon was then used to tear up the periosteum around the opening in the vertebrae. This was done carefully around the whole osseous opening in the canal. The excess blood was sponged away. The dorsal muscles which had been pushed aside by the pressure from the sac were searched out and brought together in layers with the stitches alternating in the successive layers to prevent leakage. The skin was closed and the wound sealed with collodion. A Plaster-of-Paris jacket was next applied. Extra layers were placed along either side of the spine to strengthen and serve the purpose of splints. A window was left in the jacket so that the wound might receive every necessary care. Gentle pressure was exerted over the stump by means of a cotton compress. The wound closed kindly. Ten weeks after the operation a careful inspection was made. At the site of the hole, a bony callus was found closing the opening. Above a strong bony arch united the vertebrae. Fourteen weeks after the operation the jacket was removed. It is now over two years since the operation, and at my last examination, everything seemed in a perfect condition. The child is strong and healthy, walks all over and seems to suffer no inconvenience whatever.

Looking over the literature of the subject, it was found that the Plaster-of-Paris idea was not original with us, but had been recommended by Dr. Lewis Sayre in his Clinical Lectures. "The object of mechanical treatment in spina bifida, is simply to protect all parts from pressure, mobility, and all possible injury until the process of ossification is complete throughout the entire length of the spinal column." Various methods of closing the opening in the

canal have been recommended, such as introducing celluloid plates, transplantation of periosteum, etc. But where the opening is not too large, the method employed in this case seems the most judicious for the following reasons: First, we lessen the chance of infection and irritation by not introducing a foreign body. Second, by mechanically producing the necessary physical conditions we allow nature to use her own methods of repair.

Wernitz Reported 153 Cases Treated by Different Methods.

The following table was taken from his report:

By compression,	4	cases,	4	recovered,	none	died.
" punction,	57	"	17	"	40	"
" injection,	55	"	42	"	13	"
" incision,	5	"	2	"	3	"
" excision,	8	"	4	"	2	"
" amputation,	5	"	4	"	1	"
" plastic operations,	3	"	2	"	1	"

The report of the committee appointed by the London Clinical Society, to investigate the methods of treating this malformation was in favor of injection. Surgical textbooks having accepted this report, the method of Morton gained favor, and the majority of bifid spines have been treated with iodine. It must be remembered, however, that the report of the Clinical Society bears the date of 1885. When we consider that favorable cases were operated at the time these reports were given, in this modern day when our surgical technique is more scientific, and when we do not consider it such an exceedingly difficult thing " to keep our wound aseptic," may we not hope to obtain better results along the operative course of treatment?

The committee after thorough research and much debate, decided in favor of Morton's method as against the operative treatment, for the following reasons:

Danger of death from the sudden escape of cerebro spinal fluid. The difficulty of securing proper covering for the defective portion of the spine. The great difficulty of keeping the wound aseptic.

Let me answer these: "The danger of death from the sudden escape of cerebro spinal fluid." This objection we have successfully met by the gradual aspiration. "The securing of a proper covering for the defective portions of the spine." After wandering through the experimental fields of celluloid plates, by Mayo Robinson, the periosteal transplantation, by Parks, we return to natures own method, assisted by mechanical means. In the method here suggested, excision of the sac and fitting the stump in the hole, we form a temporary bridge closing the opening. This supports the blood clot. Tearing the periosteum produces the conditions as in a simple fracture. The osteoblasts wander from the torn periosteum and organize the blood clot into a "provisional callus." Later, with the metamorphosis of the osteoblasts and the deposition of lime salts, we have the "permanent callus." By using the Plaster-of-Paris jacket, we render the spine immobile. A condition absolutely essential in any bony union. Here, as in simple fracture, we obtain union by the effusion and organization of lymph. Lastly, "The great difficulty maintaining aseptics." When we remember with what little fear we now enter the "forbidden field" of the peritoneum, any answer to this objection would seem ludicrous.

We not only meet the arguments against the radical operation successfully from a theoretical standpoint, but also from one of practice. Already statistics show a balance in favor of the operation as against injection with iodine. Powers collected 34 cases treated by excision from which were deducted 3 in which the cause of death was indefinite, leaving 31 cases, with 24 recoveries, a mortality of 22.58 per cent. Robinson reports 20 cases, of which 16

recovered, a mortality of 20 per cent. According to Hildebrandt's statistics, 66 per cent. recovered after injection, and 73.5 per cent. after the operation of an excision. It is very evident that the operation of excision is rapidly gaining favor among surgeons. I believe that future experience on an extended scale will prove that the old method of injection is far inferior to that of operative treatment.

DISCUSSION.

Dr. H. O. Marcy, of Boston, said he wished first of all to thank the reader for this contribution. Dr. Trowbridge, of New York, had written an exhaustive monograph on this subject, and had operated successfully as early as 1847. Dr. Marcy said he had himself reported a case in which the tumor had been the largest on record, and had contained about one gallon of fluid. Ordinarily the conditions for excision would not be found as favorable as in the case just reported. The question of the reinforcement of the soft parts always arose, and seemed a simple problem. It could be best done by a hernia operation. With an opening of about three inches in his case he had succeeded by this method in closing the canal. No attempt had been made to take off the pressure gradually. The patient was a girl of about thirteen years, and was now alive and well.

Dr. Reid said that Dr. Beck, of New York, claimed he could determine by X-rays whether or not there were portions of the cord in the sac, but as he understood the subject, X-rays penetrated all tissues but bone. Undoubtedly this method of examination should prove useful in determining the size of the opening in the spinal canal.

Dr. Reginald H. Sayre, of New York county, said he had had no experience in making skiagraphs of cases of spina bifida, although he had made many skiagraphs in other cases. He thought it might be possible to obtain a profile view through the sac which would show the nerves if present; in making a skiagraph of the normal spine, however he had not found it possible to detect the points at which the spinal nerves escaped from the cord. He believed the shadow of the vertebrae obscured these nerves. A picture of the patella could be taken through the femur by means of the X-rays, using proper apparatus and development. The possibility had been denied, but he had accomplished it. He had not been able to get skiagraphs of floating bodies in the knee joint, but

saw no reason why they could not be made. If the nerves could be seen with the fluoroscope they should appear in the skiagraph.

Dr. Finder said that about eight weeks after the first announcement of the possibilities of the Roentgen rays he had made radiographs and had considerable experience. He had never succeeded, however, in obtaining skiagraphs of the vertebral column which would show the points of nerve exit.

SOME CUTANEOUS MANIFESTATIONS OF SYPHILIS AND OTHER AFFECTIONS OF THE SKIN.

Dr. John A. Fordyce gave a lantern slide exhibition illustrating the following affections of the skin, viz.: Chancre of the lip; beginning epithelioma of the center of the lip; epithelioma near the commissure of the lip simulating the initial sore of syphilis; a superficial serpiginosus syphilide of the lower lip; epithelioma of the back of the hand, resembling a chancre, with photomicrographs of the same, showing it to be an epithelioma starting in the sweat ducts; an ulcer of the breast in the patient with hereditary syphilis; generalized eruption of secondary syphilis; a number of illustrations showing relapsing eruptions; extensive pigmentation following the involution of a large papular syphilide in a patient with chronic nephritis.

A widely destributed eruption of lichen planus, closely resembling syphilis; varieties of generalized psoriasis; ichthyosis; secondary and late syphilides of the palms; symmetrical ulcerations of the legs, following syphilitic pustules; late serpiginous syphilides of the face and trunk; lupus vulgaris of the face, back, thighs, etc.; photomicrograph showing giant cells in lupus; an unusual form of tuberculosis of the knee following an operation on the bursa; leprosy of the face and body; lupus erythematosus of the face with photomicrograph, showing the pathological change in the connective tissue; ulcerating gummata of the sterno mostoid muscle.

Tuberculous dactylitis; a supposed case of blastomycetic dermatitis; hypertrophic lichen planus, with photomicrographs of the same; symmetrical atrophy of the skin, with pathological illustrations; granuloma fungoides; sarcoma

cutis with several photomicrographs, showing several varieties or sarcoma of the skin; fibroid molluscum; naevus papillaris; naevus of the eyelid; spontaneous gangrene of the skin; several clinical varieties of epithelioma of the face, with numerous photomicrographs, illustrating the structure of rodent ulcer and squamous celled epithelioma.

MEDICAL EXPERT EVIDENCE—THE OBSTACLES TO RADICAL CHANGE IN THE PRESENT SYSTEM.

A paper read before the New York State Medical Association, on October 24, 1899, by WILLARD BARTLETT, Justice of the Appellate Division of the Supreme Court.

For more than ten years, the condition of the law in the State of New York in regard to medical expert evidence has been the subject of frequent, active and often acrimonious discussion among doctors and lawyers. Many reforms have been proposed and suggested, but no reform has been carried into effect. In my judgment, the failure in this respect has been largely due to a lack of appreciation of the obstacles to be overcome. Without an adequate knowledge of the difficulties to be encountered, no plan of campaign is likely to be successful. A map of the country to be invaded, if not essential, is, at all events an immense aid to the general who undertakes a conquest. And therefore I feel that the cause of reform in the field of medical expert evidence may best be promoted by first clearly pointing out precisely what are the practical objections to any changes at all in the present system, and particularly to those proposed changes which have thus far met with the most favor.

To render a discussion of this kind profitable, accuracy of definition is indispensable. What do we mean by medical expert evidence? We mean the sworn opinion of persons specially skilled in medicine or surgery upon any point in their science or art which is in question in a proceeding in a court of justice. The testimony of such witnesses is often denominated opinion evidence. In the reception of proof in judicial investigations, the rule is that witnesses

are allowed to testify only as to facts and are not permitted to state their conclusions from facts. An exception is made in favor of experts, however, who, as Mr. Wharton well puts it, "are entitled to give their opinions or judgments as to conclusions from facts within the range of their specialties, but too recondite to be properly comprehended and weighed by ordinary reasoners." This departure from the prevailing rule in the law of evidence is justified by the necessity of the case. "Courts of law and courts of justice," says Lord Bowen, one of the most distinguished English judges of modern times, "are not fit places for the exercise of the inductive logic of science. Life is short; it is impossible to place endless time at the disposal of litigants; and the laws of evidence are based upon this very impossibility of prolonging enquiries to endless length. There is hardly a scientific theory in the world which, if we were to examine into it in Law Courts, might not take year after year of the whole time of a tribunal." And after instancing the circular theory of storms and the alleged connection of sun-spot frequency with famines in India as examples, he adds: "The truth is, when you are dealing with scientific theories, it is hopeless for Courts of Law to do more than to take the evidence of the scientific men, subject no doubt to cross-examination, which may or may not condescend to particular instances, which may be brought home to them to show, if it exists, the uncertainty of the grounds upon which their opinions are founded." This general statement in regard to scientific theories, is equally true in its application to those particular theories or matters of opinion which belong within the domain of the science of medicine.

Starting, then, with the proposition that medical men as witnesses are permitted to testify not only to matters of fact, but to matters of opinion in respect to medical questions, let us consider the manner in which medical expert

evidence is ordinarily taken before judicial tribunals in England and America.

Under the system of jurisprudence which we have derived from Great Britain the functions of the jury, the judge and the witnesses are radically distinct. The jury determine the questions of fact bearing upon the issues in controversy between the parties. Their determination is based upon the testimony of the witnesses in the case as to such matters of fact and also upon the sworn opinions of expert witnesses, when expert evidence is given. The judge sees that the trial is conducted in accordance with the rules of evidence which require the admission of certain kinds of testimony and the exclusion of other kinds, and finally declares to the jury the rules of law by which they should be guided in considering the evidence which has been received, so as to arrive at a just conclusion in regard to the merits of the litigation. In trials without a jury, the only difference is that the judge himself determines the questions of fact, under the guidance of the same rules of law. In either case, when the medical expert comes before the court, he comes simply as a witness,—with the same obligations and the same rights as those of any non-professional witness,—and not under any special or peculiar sanction. Perhaps the most familiar example of the prevailing procedure, illustrative of the part played by medical expert evidence, is afforded by an ordinary negligence case, where the plaintiff sues a railroad company for personal injuries sustained while a passenger upon one of the defendant's cars. One of the questions usually involved in such a suit is the probable duration of the impaired physical condition of the plaintiff, attributable to the accident. The plaintiff calls several surgeons who testify that in their opinion the injuries are permanent or progressive in their character, and that the injured man will never be better than he is at the time of the trial. The defendant, on the other hand,

places upon the witness stand an equal number of surgical experts who are equally confident in the opinion which they express, that the complainant has suffered no permanent injury at all, and before long will be as well as ever. Upon this conflict of opinion evidence the case is submitted to the jury. Similar conflicts between the conclusions of experts are also very common in cases which involve questions as to the sanity or insanity of a particular person, and in prosecutions for murder alleged to have been committed by poison.

In order to form an opinion approximating correctness upon a difficult question of medical science arising in a judicial proceeding, it is usually necessary for the medical expert to ascertain the facts of the case as they will probably be presented by the opposing parties upon the trial. He is also frequently called upon to make physical examinations or chemical analyses, to qualify him to give opinion evidence. These tasks take time and demand labor, for which the expert not unnaturally desires to be compensated; and thus it comes about that medical expert witnesses being paid by the litigants who summon them, for the professional work which they have done in order to prepare themselves to testify, have suffered much in public esteem. They have been severely criticised as partisans, who consciously or unconsciously mould their opinions so as to promote the cause of the suitor in whose behalf they are called; and pages could be filled with quotations from the law reports expressive of the low estimate of expert testimony entertained by the higher courts in this country.

The partisan character of expert testimony becomes unmistakable, when the medical man participates in a trial not only as a witness giving opinion evidence, but also as an adviser to counsel trying the case. I took occasion to condemn this practice some years ago, in a paper read before the Society of Medical Jurisprudence, and further ex-

perience and observation have served only to confirm the views which I then expressed:

"The wise doctor, as it seems to me, will take care not to act in both capacities. If he is to testify in the case, he will not act as assistant counsel; if he acts as assistant counsel, he will keep off the witness stand. There is no good reason why the most distinguished physician should not place his professional knowledge and experience at the service of one of the parties to a litigation which involves questions of medical science. To do so cannot justly subject him to reproach; but it does lessen his fitness and his usefulness as a witness in that litigation. In assisting counsel, he will inevitably come to share the sentiments of counsel as to the result. Just as counsel will seek to bring out every fact that may prove beneficial to the cause of his client, and will endeavor to destroy, as far as may be, the effect of any proof which is injurious to him, so the medical man thus employed will suggest questions for the examination of witnesses on the other side, which will call out answers favorable to the party at whose instance he has been brought into the case. All this goes on before the jury, who fully comprehend where the medical questions really come from. If, afterward, they see the doctor take the witness stand, it is impossible that they should regard him as otherwise than prejudiced. However truthful his testimony may be, and however correct his opinions, his evidence is the evidence of a partisan, and this fact invariably detracts from its force and effect."

The discredit into which expert evidence has fallen is mainly due to the prevailing impression that experts almost invariably testify in the interest of the party by whom they are called and paid. The testimony of medical men, however, is sometimes criticised in judicial proceedings on other grounds. It is said that such witnesses ought to agree in their opinions if they are honest; but it may be

answered that the critics who take this position demand too much. Medicine is not an exact science. There are innumerable questions within its domain which cannot be answered with certitude, and as to which practitioners of equal ability and integrity may differ in opinion. When, therefore, differences in regard to questions of this character are developed in litigation, it is not always just to find fault with the doctors for the lack of harmony in their views. Their inability to agree may really represent the condition of thought in the profession, with reference to the particular subject matter under investigation. In the same class of criticism is the condemnation to which medical men have sometimes been exposed for not being sufficiently definite and positive in the expression of their opinions. The great John Hunter suffered in this way. He was called in 1781 as a witness for the defence to give expert evidence in the celebrated Donellan murder case, in which the defendant was accused of having poisoned his brother-in-law, Sir Theodosius Boughton, by administering to him a draught of laurel water. The presiding judge told the jury that Mr. Hunter was a very able man, but declared as the result of his testimony that one could hardly say what his opinion was. A question propounded by the Court, and Mr. Hunter's answer, show that the learned judge was not wrong.

"Q. I wish you would be so good as to give me your opinion, in the best manner you can, one way or the other, whether upon the whole—you have heard the symptoms described—it is your opinion the death proceeded from that medicine or from any other cause?

"A. That question is distressing. I don't mean to equivocate when I tell the sentiments of my own mind—what I feel at the time; I can give nothing decisive."

For the purposes of the present discussion, however, we may devote our attention chiefly to the efforts to reform

the evils of the existing system growing out of the fact that professional experts are generally believed to be influenced in the expression of their opinions on the witness stand by the compensation which they have received or expect to receive from the party who places their evidence before the court or jury.

A statement in detail of the various remedies which have been proposed or suggested would unduly prolong this paper. I will summarize those which have been most strongly supported in both professions: (1) The appointment of a commission of experts in insanity cases to examine the person alleged to be insane, before the trial, and make a report to be read at the trial, where all the members of the commission must attend to be examined or cross-examined, as either party may desire. (2) The appointment of a like commission in any case involving a question of medical expert evidence to report to the court and testify at the instance of either party, without any compensation except a fee to be fixed and paid by the State. (3) The relegation of all matters calling for expert testimony to a commission of experts, who shall transmit their determination to the trial court, which must accept it as a fact conclusively established in the case; and, finally (4), the appointment of expert witnesses, who must qualify themselves to give opinion evidence in the case without consultation with the litigants or their counsel, and who shall be compensated for their services out of the county treasury of the county in which the trial takes place. A bill, to carry this last scheme into effect, was approved, in 1898, by a conference of representatives of the New York State Bar Association and three medical societies belonging to the three schools of medicine recognized by the laws of this State, but it has not yet become a statute. Another plan of reform, suggested by a judge of ability and much experience, is the enactment of a statutory prohibition against receiving any

expert evidence from a witness who has been paid or expects to be paid anything by either party, except the fees prescribed by law, for his attendance at court.

It will be perceived that every one of these schemes, except the prohibition just mentioned, virtually involves the creation and establishment of a body of official witnesses. Whether the persons selected by the court are designated experts or commissioners, their function is to furnish evidence to be received by a judicial tribunal and taken into consideration with the other proof in the case. The plain purpose in creating such a class of witnesses is to give their testimony a higher authority than that of others whom the litigants may call to testify on the same points. In other words, the jury, under such circumstances, would be given to understand that the judge deemed the experts whom he had appointed peculiarly capable of expressing a correct opinion on the question at issue, and would often be morally certain to accept the opinion of such experts in preference to those of non-official witnesses who thought otherwise.

There is not likely to be any radical change in a matter of legal procedure like this, without the approval of the bar, and I doubt very much whether the bar would approve any legislation which would enable the courts or any other appointing power to create a privileged class of expert witnesses.

In considering the various projects which have been put forward for improving the administration of justice, so far as expert evidence is concerned, it must be borne in mind that no matter what provision is made for the appointment of official experts, the litigants in an action at law cannot be prevented from availing themselves of the testimony of other expert witnesses. To prevent that and restrict parties solely to the evidence of the official experts, constitutional amendments would be necessary, involving changes

so sweeping as to be antagonistic to the spirit which now pervades our judicial institutions. And, if such changes in the fundamental law were possible, is it at all certain that they would be desirable? I believe that justice in the United States is generally well and honestly administered; but such a thing is conceivable as that a judge might unwittingly appoint incompetent official experts who were anything but representative of the best element in the medical profession. In what position, then, might a physician, sued for malpractice, find himself, if condemned by their opinions and unable to exonerate himself by calling as witnesses his non-official brethren whose testimony would demonstrate that the appointees of the court were wilfully wrong, or ignorantly mistaken? A man may be a good judge of law, and yet be a very poor judge of doctors. I should be sorry to have to be treated by the physicians of several able judges whom I have known in past years, and yet, I am certain that in each case his physician would have been the first either of these judges would select for any official medico-legal preferment within his power to bestow.

The constitutional obstacles to any legislation which shall confine litigants to the opinions of officially selected experts, leave the Legislature at liberty, nevertheless, to provide for the appointment of such experts, if it sees fit to do so; but as neither party could be obliged to avail himself of their services, and as either could contradict their testimony by that of outside experts, it may be doubted whether the plan would prove to be of any actual value in practice. The incongruity of introducing privileged experts into the English common law system of administering justice, like the commissioners proposed in some of the schemes already mentioned, has never been more clearly pointed out than by Mr. Justice Stephen in his History of the Criminal Law of England, where he says:

"It is impossible to say what an expert is to be if he is not to be a witness like other witnesses. If he is to decide upon medical or other scientific questions connected with the case so as to bind either the judge or the jury, the inevitable result is a divided responsibility which would destroy the whole value of the trial. If the expert is to tell the jury what is the law—say about madness—he supersedes the judge. If he is to decide whether in fact the prisoner is mad, he supersedes the jury. If he is only to advise the court, is he or is he not to do so publicly and to be liable to cross-examination? If yes, he is a witness like any other. If no, he will be placed in a position opposed to all principle. The judge and the jury alike are and ought to be instructed only by witnesses publicly testifying in open court on oath. It never would be and never ought to be endured for a moment that a judge should have irresponsible advisers protected against cross-examination."

Apropos of this last remark, I may express my own conviction that no change has any chance of adoption in this State which does not leave the expert liable to the most searching cross-examination. The good doctor need not fear this, and so far as my experience goes, seldom suffers under it; the bad doctor should be made to fear it.

Of all the proposed reforms which have fallen under my notice, the most drastic is that which would prohibit the examination of any "subsidised expert witness" as the phrase is—that is to say, any expert paid by either party in order to look into the facts of a case so as to fit himself to give opinion evidence. If this means to forbid any compensation whatever to expert witnesses, it is manifestly unreasonable. A professional man of any standing cannot be expected to devote his time and labor out of court gratuitously to the enlightenment of litigants. Hours of research may be requisite,—as for example in a case where the origin of blood stains or the presence or action of a particular

poison is in question. If the idea is merely to disqualify experts who receive pay from either party for such preparatory investigations, but to permit them to be paid by the State, the only important objection to the plan is the practical objection of the taxpayer. Provision would have to be made for the payment of the experts of both sides, and at rates far above any statutory witness fees to which our people are accustomed. The State Bar Association bill, to which I have referred, provided that each expert witness appointed by the court should receive from the county not less than ten nor more than one hundred dollars a day for each day's attendance at the trial, the rate to be fixed by the court in the order of appointment. The compensation of expert witnesses out of the public purse on any scale which most experts would deem adequate would add hundreds of thousands of dollars a year to the burden of taxation. This of itself may not be a conclusive argument against the proposition; but its weight cannot be disregarded in considering the practicability of the plan.

However it may be in the future, I am satisfied that neither the Bench, the Bar, the Legislature nor the sentiment of the common people is yet prepared to approve any plan of reform in respect to expert evidence which would involve so radical a departure from the principles of common law procedure as the substitution of a jury of experts for a common law jury, to determine the expert questions which arise in a case. This I say irrespective of any constitutional objections to such a course. If we were to have a secondary jury of this kind to pass upon medical and surgical questions, it is difficult to see on what principle we could refuse to call in the aid of a similar secondary jury of artists to decide expert questions in art; architects to decide expert questions in building; or real estate brokers to decide expert questions in regard to the value of lands. To take the opinion evidence of such experts as witnesses

is one thing. As witnesses they fill an appropriate place and perform an essential function in our existing system of judicature. To make such experts jurymen to determine any or all questions in their own particular calling is quite another thing. The change would be so revolutionary as to destroy the system.

The views which I have thus far expressed are not to be regarded as indicative of a lack of confidence in the possibility of any considerable reform in the prevailing methods of obtaining and adducing medical expert evidence. Perhaps I am not so hopeful as others are as to the good results to be expected from compulsory legislation. In my opinion the law can do very little toward making experts or anybody else honest or upright or capable in their particular pursuits. I look for reform rather in the direction of the development of a higher sensibility on the subject in the medical profession itself. It is entirely possible for the doctors of this State or country to so frown upon the practice of acting as medical counsel and medical witness in the same case as to stamp it out completely. There is nothing to prevent a physician who is asked to see a case with reference to giving testimony as an expert from exacting an agreement that his remuneration shall in no wise depend upon the opinion which he may form upon making the desired examination; or in other words that he shall be paid just the same and just as much whether his conclusion is agreeable or disagreeable to the attorney who seeks his services. No attorney will refuse to consent to this course unless he is desirous of influencing the doctor to take one view of the case rather than another, because in that event he will get paid while otherwise he may get nothing. A tempter of this sort should be shut out of the doctor's office with no gentle slam of the door. And so in many other ways which might be suggested some of the most serious

evils of medical expert evidence may be effectively dealt with by "reform within the party."

On the trial of a negligence case it sometimes happens that the counsel on both sides will ask the presiding judge to designate a physician of his own selection, who shall examine the plaintiff to ascertain whether his injuries are permanent or not, and the parties stipulate to call no other witness on behalf of either to express an opinion on that question. This is the ideal procedure, assuming that the judge possesses a sufficient acquaintance with the medical world to select a competent expert. But the consent of the litigants is what makes it so admirable. That consent is expressive of the confidence of the parties that the judge will make a wiser choice than they could, and of their contentment to abide by the result. Experiences of this character, which are also not uncommon in proceedings in lunacy, have led me to think some form of permissive legislation might be beneficial, which should not compel anybody to do anything, but merely provide that where parties voluntarily entered into engagements of this sort the services of the medical expert called into the case by the judge should be a public charge. At all events the most favorable prospect for legislative reform lies along lines like these which litigants are inclined to follow for themselves, in the absence of any positive legislation on the subject.

In the preparation of this paper the earliest case which I have had occasion to consult is the trial of the Suffolk Witches, in 1665, during the reign of Charles II (6 Howell's State Trials, 687), and the latest is a decision of the Supreme Court of California, rendered in June, 1899 (Doolin v. Omnibus Cable Co., 57 Pacific Reporter, 774). Each illustrates an interesting phase in the development of medical expert evidence.

The Suffolk Witches, so-called, were two old women who were put upon trial at the Assizes at Bury St. Edmunds

before Sir Matthew Hale, upon thirteen indictments for bewitching several persons, including two children, who suffered from fits. Sir Thomas Browne, the celebrated author of Religio Medici, was at that time a medical practitioner at Norwich, and is characterized by the reporter as "a person of great knowledge." He was called as an expert witness for the prosecution. Three of the supposed victims of witchcraft were produced in court for his inspection and he also appears to have heard the oral evidence against the prisoners. Sir Thomas Browne was then desired to give his opinion "what he did conceive of them." The report proceeds:

"And he was clearly of opinion, that the persons were bewitched; and said, that in Denmark there had been lately a great discovery of witches, who used the very same way of afflicting persons, by conveying pins into them, and crooked as these pins were, with needles and nails. And his opinion was, that the devil in such cases did work upon the bodies of men and women, upon a natural foundation (that is) to stir up, and excite such humours super-abounding in their bodies to a great excess, whereby he did in an extraordinary manner afflict them with such distempers as their bodies were most subject to, as particularly appeared in these children; for he conceived, that these swooning fits were natural, and nothing else but that they call the mother, but only heightened to a great excess by the subtility of the devil, co-operating with the malice of these which we term witches, at whose instance he doth these villanies."

Sir Matthew Hale, in his instructions to the jury told them he made no doubt at all that there were such creatures as witches. A verdict of guilty was rendered in half an hour, and four days later the poor old women were executed. "But," says the reporter, "they confessed nothing." For this judicial murder the responsibility must rest upon

one of the greatest lawyers that ever sat on the bench in England, and one of the most distinguished men ever called upon to give medical expert evidence. The case emphasizes the objection to any change in the present system which would relieve experts from liability to the fullest cross-examination. If cross-examination had been in vogue then, as it is now practiced in the case of expert witnesses, a conviction could hardly have been the result of the trial of the Suffolk witches.

The recent California case to which I have referred is of special interest in its bearing upon the common assumption by lawyers and doctors, in the discussion of medical expert evidence, that courts and juries would be sure to get at the truth, if the expert witnesses on one side could only be induced to agree with the expert witnesses on the other. The plaintiff, a married woman, was injured in an accident upon the defendant's railroad. In the suit which she brought against the railroad company to recover damages, one of the principal questions was the extent of the injuries which she had sustained. She had been examined by three or four medical men in her own behalf and by three or four other medical men in behalf of the defendant. Both those who testified for the plaintiff and those who testified for the defendant agreed that the plaintiff was suffering from a uterine or ovarian tumor, but there was a difference of opinion as to whether the tumor could have been produced by the plaintiff's fall. There was a verdict of $20,000 against the railroad company. Ten days after the trial the plaintiff gave birth to a child at full term, although stillborn, and it was admitted that there had been no tumor whatever! "Since the time of Mr. Pope," says the Supreme Court of California, "it has often been inquired, 'Who shall decide when doctors disagree?' This case shows that serious error may lurk in their conclusions even when they have agreed." Such an occurrence, if narrated in a work

of fiction, would be criticised as so improbable as to be ridiculous; but there is no romancing in the cold type of a volume of modern law reports. The possibility of so serious an error being committed by so many respectable members of the medical profession—for the court speaks favorably of their standing—tends to afford some justification for the popular distrust with which medical expert evidence is often regarded.

In reference to this matter, however, I desire to express my dissent from the sweeping condemnation of medical experts in which the courts so often indulge. There is scarcely a case where expert evidence is taken, in which some of the experts are not perfectly honest. They do not deserve denunciation merely because other experts are dishonest, or because it is often difficult to tell the false from the true. The medical profession itself must help us to make the distinction between the two classes easier. However objectionable are some of the aspects of medical expert evidence, it cannot be dispensed with in the administration of justice. Let us remedy the evils, but, while we are endeavoring to do so, let us avoid that exaggerated denunciation which is calculated to convince the community that no surgeon or physician who takes the witness stand as an expert is worthy of belief. Such teaching is a libel on the most unselfish profession in the world.

What I have said thus far has been so largely in the nature of destructive criticism, that I may naturally be asked whether I have no remedy to suggest for the manifold evils in regard to medical expert evidence which are generally recognized in both professions. In concluding this paper, let me add a few observations in answer to this question. I should be sorry to feel that the prospect of reform was hopeless. There is one direction in which it seems to me brighter than any other. You have a code of medical ethics which every physician and surgeon is bound

in all professional honor to observe. By that code you regulate your own conduct in the practice of medicine, and insist that those who join the ranks of your profession from year to year shall agree to regulate theirs. No statute could practically be more binding. Why may you not extend its provisions so as to embrace the conduct of the medical man when he assumes the role of the expert witness? The matter is absolutely within your own control. You can declare in your code that a certain course of action on the part of a medical expert shall be deemed honorable and professional, and that a certain other course of action shall be dishonorable and unprofessional. The first steps in enacting such amendments in your professional law would necessarily be tentative. Mistakes would be made which you would have to correct. Rules from which the most good was expected might prove useless, and others which promised much less might prove to be the most effective of all. But in making them and changing them you would be independent of the Legislature; you could act solely for the good of your profession, untrammelled by official influence or power; and so far as you desire advice from the bench or bar, I am sure it would gladly be afforded. A signal advantage of dealing with the subject in this way is that it would involve no interference with existing rules of judicial procedure. The rights of litigants or the manner of trying lawsuits would in no wise be affected. The needed reforms would be brought about by the compulsory operation of your own code of ethics acting personally upon each member of your profession. That code, amended as I am sure it might be if the physicians and surgeons of this country took the matter seriously in hand, by commanding medical experts to do what is right and subjecting them to professional censure and obloquy if they did what was wrong, would be more efficacious than any law on the subject which any legislature could enact.

It would be your own law, adopted by yourselves for yourselves, and it would have that powerful sanction which belongs alone to laws which are a natural growth out of the conditions which lead to their adoption. To the action of your profession in some such way as this I look with more confidence than anywhere else for the ultimate accomplishment of all that is desirable in the improvement of medical expert evidence.

DISCUSSION ON MEDICAL EXPERT TESTIMONY.

By Hon. Joseph F. Daly, of New York.

I regret that what I have to say upon this subject will not be presented in the excellent form in which Judge Bartlett has embodied his views. I had intended to prepare a paper chiefly because a paper is very useful in public discussions, since if you write what you expect to say and adhere to it, you generally know when you are through, while if you trust to inspiration for a happy conclusion you are likely to become tiresome. But it happened that just as I was about preparing my paper I was called upon by my fellow citizens to take a prominent part in the present political canvass and I have been ever since engaged in electioneering, as you perceive from the way I manage to introduce the subject whenever I am called upon for an address.

The topic we are to discuss is one of the most interesting engaging the attention of the medical and legal professions —one, too, which is likely to remain the subject of debate until a better system of dealing with expert testimony is attained. It must be remembered that what we have now—which is so much criticised and which is said to be so full of defects—is the product of the evolution of the science of law through many generations. It is the very best thing that law-makers, legal experts and practitioners have been able to produce. This is significant. The expert in a case is regarded simply as a witness, although a witness of a special and very high character. He is subpoenaed as a witness, but, owing to the special character of his function, he is employed and paid according to the knowledge, skill

and experience which he places at the services of the parties to the litigation.

Originally, in the jury system, there were no witnesses, expert or otherwise. An accused person was confronted with his neighbors, who, as jurors, were themselves the witnesses of his guilt or innocence; they were judges and jurors and witnesses all in one, and their decision was deducted from personal knowledge, reputation, rumor and hearsay. Qualities which we regard as grossly insufficient but upon which cases are decided in some jurisdictions today, notably in France, according to some reports. There are some countries in which the evolution of the law as a science has not progressed as it has with us, and it is because we are so far beyond rudimentary notions of criminal jurisprudence that we are tempted, as lately, to criticise our neighbors.

With us, after a while, the juror's functions became better defined. The jury was still taken from the neighborhood, but not because they were expected to know all about the case. Witnesses were brought before them to testify, and thereafter was developed the admirable system of the law of evidence—as perfect as human things can be expected to be—which has been built up in this and other English speaking countries for the sifting of proof and the ascertainment of facts. Soon, of course, it was discovered that certain witnesses had to be summoned to testify, not to facts, but to conclusions from those experiences upon which the sciences are founded. That was the beginning of expert testimony. Medical experts were the first summoned and it is quite appropriate that in this hall dedicated to the medical profession this discussion upon expert testimony should take place. After the medical expert came the professors of every science and the skilled in every trade and craft to enlighten the jury. There was one thing, however it seemed, that no expert needed to be called upon and that

was intoxication. Any person was supposed to be an expert on that subject—upon that and irrational behavior; and the jury is supposed to know as much about them as anybody else.

I have always wondered why it should be considered matter for reproach or derision that medical or other experts disagree or contend with one another upon a trial. The accident cases referred to by Judge Bartlett are very familiar of course. Each party employs the ablest physicians he can. These are brought into court to testify, to criticise each other and necessarily in following each other's evidence to suggest questions to counsel and then to go upon the stand and testify. I have never known one such witness who was not willing, upon cross-examination, to qualify his testimony where the facts as newly presented to him required a modification or an exception to his previously expressed opinion. The more intelligent the expert witness, the higher is his appreciation of the intelligence of the jury. He knows that they are not simpletons and that it would be ruinous to the whole authority of an expert if he were to deny a manifested conclusion from a given state of facts. I can say that in all my experience I have never known a medical expert to be wanting in complete frankness under cross-examination.

If we were to discard the present system by which the expert is treated as a witness and his judgment is submitted to the judgment of the twelve ordinary men in the jury box, with what could we replace it? Judge Bartlett has suggested an instance where the lawyers on both sides asked the judge to appoint an expert to examine into the case and then give the jury his conclusions. The case in which that can be done must occur very rarely. Ninety-nine cases in a hundred involve a fair difference of opinion among experts and there is no way, so far as lawyers know, of getting

a fair determination of the dispute except to let the experts contend with each other upon the witness stand.

Suppose we change our system and in addition to calling an ordinary jury to decide the facts of the case, we empaneled a jury of experts to decide the questions of science. I have heard of such a proposition. The mind fails to grasp all the possibilities of delay and expense involved in such a system. In the first place the jury of scientists would themselves have to listen to the testimony of experts. Would there be fewer differences of opinion or any better chance of agreement? And would there be a separate jury for each separate department of learning upon which experts might be called in even one case? There is so much to be thought of when we are called upon to decide upon a choice of evils, or even of inconveniences, that I am tempted to tell a story which the discussion recalls to me. One of our soldiers in Manila, who had served in Cuba and had been inveighing there against the severities of Weyler, was now declaiming against the evasions of Aguinaldo and to the same comrade. "Well, old fellow," asked the latter, "which do you think you prefer, Weyler or Aguinaldo?" Now, our soldier was a New York boy and remembered what Kipling would call "another story" which he had heard at the negro minstrel show at home. You all remember the old time minstrels sitting in a semi-circle with the dignified interlocutor, Mr. Johnson, in the center and Mr. Bones at one end. At one of these comical séances Mr. Bones propounded to Mr. Johnson the query whether if he were in a boat with his wife and his mother and the boat struck a snag and sank and he could only save one which would he save. Mr. Johnson immediately responded that he would save his mother, and upon Mr. Jones challenging the propriety of such election exclaimed in a feeling manner, "Mr. Bones, you can get another wife, but where under the bright canopy of Heaven will you get another kind and loving

mother!" Mr. Bones was so moved with this utterance that he burst into audible lamentations which were, however, soon interrupted by Mr. Johnson proposing a query in *his* turn. He said, "Now, Mr. Bones, let us suppose that you were in a boat with your wife and *her* mother—" But here he was stopped by Mr. Bones, who, with a broad grin, observed that that was "a cinch!" "Wait a moment," interposed Mr. Johnson, "wait a moment; this is a serious question, to be answered upon mature deliberation. I repeat: Suppose you were in a boat with your wife and *her* mother and the boat struck a snag and began to sink and you could only save one, which would it be?" "Well, sah," responded Bones soberly, "upon mature deliberation I think I would save the snag!" "What, sir?" indignantly demanded Mr. Johnson. "Yes, sir," responded Bones confidently, "you see you can get another wife and another mother-in-law, but where under de bright can-opener of heaven will you get another kind and loving snag!" So our soldier boy, recalling this anecdote when he was asked which in the whole he preferred, Weyler or Aguinaldo, hesitated a moment and then cheerfully replied, "I prefer army beef!"

Now, let me say that when we are seeking to better existing conditions in jury trials we must not lose sight of the fact that the system was never organized with the expectation that it would in all cases provide scientific solutions of the disputes of fact presented to juries for determination. We must remember that in a great number of conflicting statements of facts there can be no satisfactory scientific solution; but that the perfection of our jury system is that it is a means of ending controversies. After the litigants and their witnesses have been heard and twelve jurymen have listened and have agreed upon a verdict, the dispute is ended; and men have become accustomed to acquiesce in that termination of their differences. It is a part of the system that all who become involved in the dis-

pute as witnesses, whether of the facts, or as to matters of science, skill or trade, must submit their statements and their opinions to the same tribunal and to the same processes of examination by which that tribunal, the jury, arrives at its understanding of the case.

And as to that inconvenience of which the expert witness so often has reason to complain, namely, that he is subjected to badgering cross-examination by counsel perhaps imperfectly instructed in the witness' science, it ought to be understood that neither court nor jury loses any portion of respect for the witness under such an ordeal. Above all it should be remembered that no witness under our law has any immunity from the most searching cross-examination, even when it takes its most irritating form of insinuation, imputation of prevarication or bias. No inquiry into an expert's learning or intelligence or his conclusions need be regarded in any other light than as a means of eliciting matter to enlighten the jury.

And as to that other matter which is so frequently and so unnecessarily and unjustly referred to in trials where experts are called—the circumstance that the expert witness is paid for his examination of the case, for his attendance in court and for his testimony on the stand—I would say that criticism of that fact is most unjustifiable. His fellow scientist, the lawyer—the expert in legal science—is paid for *his* examination of the case, for his attendance in court and for his argument to the court, which is his testimony to the law. The whole body of our jurisprudence has been built up and perfected by the aid which counsel retained by each side of the case have rendered the courts. Counsel are paid to assist the jury in arriving at the proper view of the facts. Does anyone for a moment deem it improper for litigants to employ and reward generously the best legal expert they can obtain? Is not our whole progress in law due to the employment of learned counsel paid out of

the private purses of the litigants? And shall it be said that when men, eminent in the medical or other profession, who have made a study of their science, are called to aid the court and jury they are not in all respects upon the same honorable and eminent plane as the counsel in the case? The true view of this matter ought to silence forever any criticism upon this point or any imputation that an expert is not a perfectly fair and unbiased witness, though summoned by one side only and rewarded as the counsel in the case are rewarded for assisting court and jury to do justice between the parties.

EXPERT MEDICAL TESTIMONY.

A paper read before the New York State Medical Association at the Academy of Medicine, New York City, October 24, 1899.

By Charlton T. Lewis, Esq.

A great evil has been shown to us, and a remedy is called for. Let us first impress it on our minds that there is no occasion for reproach or recrimination of one profession by another. The man of science, retained as an expert, has sympathies, perhaps convictions, growing out of his connection, which he sees assailed. It is human nature to be zealous in the cause he represents, and the zeal, at least, is good. Worried and badgered, like a bull in the arena, he sometimes loses his balance of judgment, his serene, impartial spirit, and leans in details of knowledge towards the side of his wishes or his larger beliefs in the truth of the cause. Nor is it fair to condemn the lawyer, whose aim in the case is simply success; whose fame, whose future, as well as his present fees, are at stake. The professional conscience identifies him with his client, and shall you judge him by the personal conscience alone? Perhaps he has motives not easily seen, and desiring to serve and save a cause he believes in, he is eager to cover and confuse the real weaknesses the exposure of which would work wrong. If you were his client, you would wish him a free hand in the faithful work. When he is another's advocate, pardon something to his spirit of loyalty.

The fault is in the system of jurisprudence, the methods which have been traditionally developed for eliciting the truth in litigation. The first object of this system is the protection of the free citizen against oppression, disorder and fraud; the guardianship first of public peace, and secondly of individual rights. Hence what it seeks is a rough average justice, not a wise and ideal exactness. It

is of prime importance that there be an end of controversy, and only of subordinate consequence that there be a precise adjustment of rights and claims. Let disputes be settled, and that by an authority which is final; and let them be settled as nearly right as is commonly practicable in human affairs. Wrongs will be done, at best. They must be accepted; and the loser is compensated in the end by the order of society maintained, and by the general law of average, which tells him that the wheel will turn full circle, and his time will come. Meanwhile, civilization advances, law and jurisprudence improve, and our profession as a whole works together for its elevation towards the unattainable ideal of scientific truth and perfect justice.

But this traditional system of litigation is utterly incapable of eliciting scientific truth, or of solving any problem in which science is a determining factor. In affairs, truth is commonly not ascertainable; that is, the precision demanded in reporting any observation of phenomena, or in formulating any natural law, which would deserve the notice of an expert investigator, cannot be attained. We content ourselves with a balance of probabilities, upon a mass of vague and often conflicting evidence, and accept the best practicable guess. Nay, in a jury of twelve, when assessing damages, for instance, each man will make his own guess, according to his own mental impressions, and then they will all agree to strike an average and make it their unanimous verdict. But to a scientific question there is a definite answer. Truth and error have precise boundaries. If the fact or the law be not ascertained, it is to be sought. There is no problem which science can formulate, the solution of which it dares to despair or to renounce. The ignorance, the confession of doubt, is no reason for vagueness, for ambiguity, or for compromise. It must be restless forever till it finds rest in truth.

This is the source of its dignity. It holds over practical life an ideal of precise knowledge, of definite law, of exact guidance, never to be attained, but always to be sought. We have, therefore, no controversy in science, but a common struggle for truth. The moment differences come into conflict, and the effort to learn or teach the truth becomes a struggle for victory, it is degenerate; it is pseudo-science. The world is conscious of this, and looks with far other eyes on men of the law striking blows for the cause they have espoused, than on physicians, chemists, physicists, struggling with personal zeal for views, theories or systems of their own, asserting as certain what their colleagues and equals doubt, or casting doubt upon accepted laws. It is the humiliation of science, the degradation of its position and of its influence, when scientific truth is dragged into the arena of conflict between paid advocates. One of the greatest social phenomena of modern times is the scientific revolution in medicine, during the last generation. It is now entitled to such honor and trust as it never could claim before. But a chief hindrance to its attainment of the high place it ought to hold in the general mind is the parade so often made of the doubts, disputes and mutual distrust of its professors. There is not a form of quackery or delusion practised among us which is not fostered by the unfortunate disagreements of medical experts in courts of law. Where eminent representatives of the most advanced medical knowledge contradict one another on question after question, which for the moment engrosses the thoughts of men, it is easy to make a plausible plea against the authority of their science.

What we call expert testimony has two departments, which are entirely different in nature. In the first place, the man of science is often called on to state or expound a law of nature, a general scientific truth. For instance, a medical man is asked, where a substance has been admin-

istered, and a felonious intent is charged, whether the substance is a poison, and can destroy life; or in a suit for malpractice, whether, under certain conditions, a particular operation affords the best hope known to surgery of prolonging life; or, whether a given definite series of phenomena are convincing proof that death has resulted from a cause named. This sort of evidence is mostly elicited by hypothetical questions. But the duty of the scientific mind in every such case is really to formulate a natural law; to give precise expression to one of nature's methods of working. It is thus precisely parallel to the duty of the judge, who informs the jury of the statutes enacted or legal principles decided, which bear on the case. Yet the anomaly confronts us that the scientific judge appears as the retained advocate of a party, and then is exposed to a cross-examination, which may confuse him, and is almost sure to confuse the jurors. What would be the state of a court composed of judges retained by the parties to instruct the jury in law? Or of a court in which the judge might be examined and cross-examined by the opposing counsel?

Our jurisprudence has naturally developed a more excellent way. When we believe that our cause needs a precise definition of the law upon any point, we formulate the question with care, so that the answer we expect will make most strongly in our behalf. After reflection, and with full liberty of comment and qualification, the judge answers all the points submitted. By this plan he has every opportunity to avoid being entrapped, and to present the entire law of the case in appropriate form. It would thus be wholly in the spirit of our traditional system, and in accordance with the methods which all experience approves, if the laws of nature, the principles of science, applicable in each controversy, were formulated by an expert tribunal, independent of controversy, and accepted by both court and jury.

But the second department of expert testimony is much more extensive than the first. The man of science is required to detail the particular facts in a case which demand trained and exact observation. Now this kind of evidence is wholly different from that which lay witnesses give. For example, a suit for damages by an accident very often turns on two questions, first, was there contributory negligence on the part of the injured; secondly, what was the extent of the injury. So, on an indictment for murder, the vital questions may be, first, did the accused strike the deceased; secondly, was his blow the cause of death. You see at once that the first question in each case may turn on a great variety of facts, seen perhaps by many casual witnesses, each one's observation being a link, which he can himself hardly understand, in a chain of circumstances which as a whole will produce conviction. Examination and cross-examination may bring out successive fragments which dovetail together into a narrative which commands belief. But in each case the second question requires delicate and precise observations deliberately combined and supporting the inference of a trained mind. Here such an examination is wholly inappropriate. If the observations are simple, untechnical, and the inference obvious, it may do no harm. But if the process be one of abstruse and difficult research, the inquisition by a layman before laymen becomes at best a farce. And if there is a shadow of deviation from the absolute impartiality of science, or if there is room for the imputation of such a shadow, the result is often most unseemly. For instance, in an inquest of insanity, behold two so-called experts giving covert arguments for and against a conclusion, and a layman compelled to decide between them. It were just as reasonable to bring before the judge a patient suspected of small-pox, to determine whether he shall be sent to the hospital for contagious cases. Unfortunately the rules of law which govern such cases are no better than traditional superstitions.

Thus, it has been repeatedly held that no expert shall be permitted to inform a jury that a man under inquest is insane or that he is sane. The expression of an opinion on this question would be a judgment on the issue, and thus a usurpation of the prerogative of the court! Nor have the rules for such cases which have been evolved by judicial wisdom any scientific value. The gradual formulation, by generations of learned and upright judges, of the principles of justice in affairs has resulted in the body of the common law, a pillar of our civilization. But the process of evolving, from the application of conscience to common sense, rules of conduct, of property rights, and of social and public relations, does not apply to the problems before the scientific investigator. Insanity is a subject for medical, not for legal definition and inquiry. The true question, in every case, is whether there is malformation, organic disease or functional derangement of the organ of the mind, which accounts for the criminal act, or destroys rational purpose in conduct. The attempt to decide it on general considerations, appreciable by the untrained and commonly prejudiced observer, works gross injustice to society and to individuals.

These reflections prove beyond dispute that the ideal plan would be a complete separation of tribunals, so that expert evidence should be heard only by an independent scientific court. Every question needing such examination should be formulated by the parties, under the supervision of the judge, and submitted to a tribunal of special skill and entire impartiality, whose responses shall inform and direct the court. Errors would still be possible, hardships would occur, it can even be plausibly argued that the plan would open the way in some instances to injustice. But beyond doubt the error, hardship and injustice now wrought would be indefinitely diminished.

How far is such an ideal practicable? We cannot say. We know the obstinate resistance of conservative forces to

every reform in jurisprudence. The legal profession and much of the thoughtful public take fire at any suggestion of multiplying state commissions, and especially of dividing judicial authority and responsibility, or of encroaching upon it. Any practical reform must acknowledge these formidable objections and evade them. No sudden revolution in the administration of justice can be thought of, and any change for the better must be gradual and tentative. As a feasible measure for opening the way to a complete reform, perhaps nothing can be devised better than this: Let the legislature vest in the trial court power, whenever it shall appear that any question of fact material to the issue can only be determined by expert authority or investigation, to appoint a skilled tribunal, to formulate with the aid of the parties the questions to be submitted, and to accept the answers, or give them to the jury, as conclusive. The next step would be to exclude every other form of expert testimony, and thus to remove from the courts of law all conflicts between partisan experts.

The only objection to this plan which has apparent weight is that every litigant must be protected in his indefeasible right to offer any evidence pertinent to the issue. But in fact it is not proposed to impair this right. Before a competent tribunal, let him be privileged to prove what he can, that a bullet in the heart is presumptive proof of death by apoplexy, or that carbolic acid is really a food; but let him not confuse the minds of a jury by throwing doubt on established truth, or destroying confidence in ascertained law. If he attempt to impose on them wrong and absurd views of a statute or of a decided legal principle, the court will check and correct him. Why should he be permitted to mislead them as to truths they are far less capable of understanding, but which are equally essential to their just verdict? No right of a litigant is impaired by securing to the court and jury the best instruction attainable in the truths of science.

THE NATURE OF EXPERT TESTIMONY, AND THE DEFECTS IN THE METHODS BY WHICH IT IS NOW ADDUCED IN EVIDENCE.

A paper read before the New York State Medical Association at the Academy of Medicine, New York city.

By William A. Purrington, Esq.

October 24, 1899.

Mr. President, Members and Guests of the Association: —I trust you have noticed that to-night we are all giving unsworn testimony to our opinions upon one branch of opinion evidence. The other speakers are experts. I am but an ordinary witness. Therefore, if it were true that expert testimony is open to suspicion and less to be relied upon than that of ordinary men, this paper would be the most,—instead of being, as it is, the least,—valuable contribution to our discussion. Thus by *reductio ad absurdum* you are satisfied at the threshold of the inaccuracy of that premise.

You will not expect of me in the half hour allowed the paper any very novel views upon that part of the subject allotted to me for dissection. It has been cut up and turned over many times. But every autopsy, even though badly done, may be useful; if not as a "bringer of new things," at least as a refresher of memory; and the end of this paper will be attained if it only help to revivify your ancient knowledge.

There is undoubtedly wide spread agreement that expert testimony as now given in legal proceedings is unsatisfactory, and equally widespread disagreement as to the method of making it satisfactory. In a way this is fortunate. If everything were perfect, or if we all agreed as to methods

of remedying imperfections, no one could busy himself with reform; and, consequently, the ranks of the unemployed would be dangerously crowded. Life would become stale. We should not, for example, have had the pleasure of coming here this evening; or, if we had, then, as soon as my esteemed friend Mr. Justice Bartlett had read his thoughtful and interesting paper, the chorus would have cried: "Those are our views precisely," and we should have left this hall with that profound sense of loss experienced by good physicians and lawyers when a patient dies or a cause is finally settled. We should have had one topic less to talk over in common, and to differ about.

Ordinarily diagnosis precedes treatment. Your programme to-night reverses this rule. We began with the remedies, leaving final diagnosis, as sometimes happens, to be made after the autopsy. It is for me only to examine the constitution and ailments of expert testimony, fully aware that my predecessors, in so far as they have done the same thing, have followed the precedent of that unprincipled horse which, when the veterinarian was about to treat him, by insufflation, blew first.

Is it not paradoxical, at least, to say "Expert testimony is less to be relied upon than that of ordinary witnesses or the conclusions drawn from the latter by average jurors ?" Does not that seem equivalent to saying: "Inexperience is a more certain guide than experience; wisdom less to be depended upon than ignorance; trained thought a poorer reliance in its own field than unskilled conjecture?" Yet law reports are full of judicial opinions that all expert testimony is open to suspicion, to be received cautiously, and to be subordinated to testimony as to the "facts," so-called. Experts, as a class, are pronounced not only biased but, by implication,—yes, even in direct expression,—dishonest.

In the old and ever cited Tracy Peerage Case (10 Cl. & Fin. 154) Lord Campbell said that they come with such bias

that hardly any weight can be given to their evidence. In a very recent case, Ferguson versus Hubbell, (97 N. Y., 507), Judge Earle, of our Court of Appeals, professing unwillingness to endorse the strong language of Lord Campbell, contented himself with this mild statement: "It is generally safer to take the judgments of unskilled jurors than the opinions of hired and generally biased experts;" and most of us have smiled at the amusing if cynical classification of liars, wherein primacy of that interesting group is given to experts.

But text-books and essays have so fully cited the utterances of this sort, as well as others, more kindly, that it would waste time to recite them here. Let it be ours to inquire whether, on general principles, this extreme denunciation is justified; whether there is more truth in our legal paradox than in its medical counterpart, thus expressed by a brilliant essayist: "In science there are three unpardonable sins—trusting the senses, non-experts attempting to do the work of experts, and using deduction for induction, and *vice versa*."

As college lads some, perhaps most, of us were taught that Right is founded not in the nature or Will of God, nor yet in the nature of man, but in the nature of things. Is there not room to believe that evil in Expertism lies more in the nature of things and our imperfect legal methods of eliciting truth than in the bias and depravity of expert man? It certainly is in the very nature of things that expert testimony, like all other testimony, whether to opinion or to so-called facts, must vary with the witnesses. Why, then, this apparent assumption that experts, even in the inexact sciences, should agree in their testimony, and that their disagreement necessarily affords presumption, if not of dishonesty, at least of bias? Because the expert avowedly testifies to "opinion" only, and is, therefore, not punishable for perjury, even in case of willful falsehood, is it

fair to assume that he deliberately lies more frequently than the ordinary witness? How often is that ordinary witness punished for perjury, or restrained by fear of its penalties? The address of the President of our State Bar Association, two years ago, was as harrowing a picture of the perjury of ordinary witnesses, as has ever been presented when experts have furnished the artist's material. I am optimistic enough to believe that an expert is as honest as are other witnesses; pessimistic enough to think that perjury is too frequent with all classes of those who testify in court; and charitable enough to fancy that much of what many suppose to be willful falsehoods is really only the result of inaccuracy in observation, inference, memory, and understanding, supplemented, far more than is commonly imagined, by clever suggestion or by ineptness on the part of examining counsel. Ordinary witnesses, even the honest, constantly differ in their testimony as to those every day occurrences supposed to be apprehended immediately by the senses and called "simple facts;" the reason being as we all, more or less distinctly, perceive, that every witness is, in the last analysis, only giving an opinion.

Some men are so constituted as to accept every apprehension of sense, and result of mental processes, as positive facts. What they see, or think they see, they know absolutely. Others are so convinced of the relativity of all knowledge that, to them, nothing is certain; they accept mathematical axioms with mental reservations. As describing these, this nonsense, aimed at John Stuart Mill, almost becomes sense:

> "There was a philosopher, Mill,
> When you said 'Twice two 's four,' he said, 'Still,
> Perhaps, up in Heaven,
> It makes six or seven.'
> This abnormal philosopher, Mill."

Medical jurisprudence is, contrary to what seems to be a general lay opinion, the science, not of applying legal prin-

ciples to elucidating medical questions, but of applying medical knowledge to the solutions of legal problems; and in practice the law must derive this aid from medicine through expert testimony. It would never do for the court and jury to retire with a medical encyclopaedia and "cram up."

An expert is only a person specially experienced, skilled or learned in some art or science; or, as some would have it, in any department of knowledge, or skill, wherein the formation of a sound opinion necessitates a previous course of study and experience beyond the lines followed by the average man. This expert is called upon in litigation to enlighten the court and jury by giving an opinion upon a state of facts, either within his knowledge or, more often, narrated to him for the purpose of eliciting his opinion and serving as its basis. Even an ordinary witness, if he cannot otherwise sufficiently convey his meaning to the jury, is allowed—where his testimony, necessarily, presents a conclusion,—to give opinion evidence, providing that he recites those facts personally observed by him, which serve as the data of his opinion. The expert differs from him in this—that the former may give his opinion not only upon facts that he has observed personally, but, and to this end he is most frequently called, upon facts testified to in the case by others. Thus both a medical man and a layman may testify upon the issue of A's sanity; but while the former may base his opinion upon facts testified to by other witnesses, the latter must narrate those personal observations of his own, which have led to his conclusions; and there is judicial opinion that the testimony of neighbors to A's sanity, given under this rule, is more satisfactory than the opinion of a physician based upon a hypothetical question. But I think that if the judicial mind rendering that opinion had been analyzed, there would have been found in it an unrecognized,—subliminal, if you please,—impression

that the neighbor's opinion, ostensibly based upon his recital in evidence of certain erratic actions of A, rested, actually, upon very many observations not before the court or jury.

One class of experts in the law have a great advantage over all others. Their opinions are authority;—for a time at least. I refer not to attorneys, who are rarely called as expert witnesses, save upon the point of a fellow attorney's fees,—when agreement is likely,—but to that great body of experts, who rarely, if ever, go upon the witness stand, yet are always under a continuing oath, and in every case, upon the facts before them, render their opinions as to the law,—the judges. When they give an opinion, whether it be right or wrong, in our opinion,—it is of binding force until set aside, and that is more than can be said of yours of the faculty or ours of the bar. I have sometimes wondered whether those judges who have been most denunciatory of the differing conclusions at which reputable medical experts have arrived upon the facts in evidence have reflected that they, too, belong to a body of experts in the law, whose members often differ, very honestly and ably, in drawing conclusions,—even from agreed facts. You laymen would think, for instance, that it is much easier to define the word "malice," to say whether a corporation is liable for its servants' malicious acts, whether certain words are defamatory within the ordinary understanding of reasonable men, and whether a criminal statute is retroactive in effect and, therefore, *ex post facto*, than it is to tell whether certain physical symptoms indicate typhoid fever or appendicitis, whether morphine poisoning can be absolutely diagnosticated from symptoms alone, or what, with reasonable certainty, is the prognosis of a morbid condition,—say, traumatic hysteria. Let us see. Since memory runs, not to the contrary, English judges have cudgelled their brains over the legal definition of malice; and yet, only recently,

in the great case of Allen versus Flood [(1898) App. Cas. 1] involving that definition, two judges and six Law Lords reversed the judgment of ten judges and three Law Lords; in other words, eight judges reversed the opinion of thirteen, not because the former were necessarily wiser, but because they sat higher in the Forum. In another recent English case, Neville v. Fine Arts and General Insurance Company [(1895) 2 Q.B., 156; (1897) App. Cas. 6] the judges, avoiding with much skill the vexed question of corporate liability for the malicious acts of servants, passed upon the point whether certain words would be ordinarily understood, by reasonable men, as defamatory. Pollock, B., Lord Esher, M. R., Lopes and Rigby, L. J. J., decided that reasonable men would so understand them. But upon appeal, Lords Halsbury, L. C., MacNaghten, Shaw and Davey were of opinion that the words were not so understandable—in short, that Pollock, Esher, Lopes and Rigby did not possess the understanding of reasonable men. Coming home now, across the water, we find the recent medical case of People vs. Hawker (14 App. Div., 188; 152 N. Y., 234; 170 U. S., 189), wherein the facts were agreed upon, and the only question involved was one of law—whether a statute forbidding one convicted of felony to practice medicine could apply to a licensed physician so convicted prior to its enactment—in other words, whether the statute was *ex post facto*. The trial judge decided negatively. The Appellate Division of this department, by a vote of three to two, reversed him. The Court of Appeals in turn reversed the Appellate Division, two of its judges dissenting; and finally, the Supreme Court of the United States, after two arguments, affirmed the Court of Appeals, three of its members dissenting. Surely no one would presume, because of these differences of opinion, to doubt for a moment the ability, the learning, the absolute honesty of these various experts of the law; and it is equally manifest that the frequent differences of opinion

among medical experts—the only class we are now considering—should not of themselves alone justify the criticisms so freely made. We must seek further, therefore, the explanation of our paradox.

As has been said already judges, although experts in the law, do not render their expert opinions from the witness stand or under cross-examination; nor are their opinions, like those of other experts, avowedly to be passed upon and, it may be, disregarded by the jury except where in cases of criminal libel jurors are expressly made judges of the law and the fact. In civil cases judicial opinions not only theoretically, but as a general rule, practically control the jurors in matters of law. In criminal cases, however, jurors, although directed save in actions for libel to follow the law as laid down by the court, constantly disregard judicial instructions as well as expert testimony; and while in so doing they may violate a moral and legal duty, they exercise, nevertheless, a power undoubtedly possessed by them in practice under their right to bring in a general verdict of "not guilty" no matter how absurd it may be; and rarely, if ever, do they incur for such misconduct a greater penalty than a contemptuous rebuke and discharge from further service. Yet although it thus appears that the jury may disregard upon occasion even the most authoritative expert opinion, nevertheless—let laymen jeer as they will at the glorious uncertainty of the law—the opinions of the judges who sit high on their thrones of awful state are hedged about, and properly and justly hedged about, with that reverence which attaches to authority. But how is it with the scientific experts? Divested of all pomp and panoply they utter their opinions from the same stand with other witnesses, the obvious truth tellers and the unmistakable liars, and they utter them, too, under the same procedure that is adopted to elicit what we fondly call the facts of the case.

To elicit in litigated cases, the truth from minds as far as possible apart, in qualities, powers, and processes, we have certain arbitrary rules of evidence. They are not careful, scientific formulations, beaten out by the brain laboriously, and systematically; but they have been largely struck off by rough common sense as occasion arose at Nisi Prius and preserved for us in the museum of precedents. They have answered—they still answer—their purpose of getting at the truth approximately, minimizing lying, and putting an end—at some time or other—to litigation. But they are not to be venerated as the best guides to absolute truth. Only within comparatively late times, has effort been made to systematize them. They are still to be sought among the bewildering and contradictory cases wherein substantive law is confusingly blended with the law of procedure. Our reverence for them, like our veneration of the boasted Saxon institution of jury trial is based somewhat upon misapprehension. The jury came to us, apparently, not, as we have fondly supposed, from our Saxon but from our Norman ancestors, whose descendants in France of to-day disregard in legal procedure pretty much everything that we have come to hold sacred. So, too, our evidential rules, while serving to get at truth, in a rough every day fashion, in accordance with our traditions, and the spirit of free government, are by no means, as some fancy, the best rules for the attainment of scientific truth. If, for instance, Darwin had excluded hearsay evidence, the Origin of Species would never have been written; and even in ordinary affairs, there is not a day, scarcely an hour, when men, lawyers and laymen do not, where honor, life and property are involved, act with assurance and safety upon testimony inadmissible in courts of justice.

Undoubtedly our legal procedure is intended and supposed to elicit the whole truth relevant to the issues of a trial. We hope and are fain to believe that this is its usual

result. But let us consider for a moment its nature. Litigation means contest between two sides. The law's theory is, that each side shall have a fair field, and no favor for the presentation of so much truth as makes for its contention. Each litigant calls witnesses who swear that their evidence shall be the truth, the whole truth and nothing but the truth, but that means that they will answer truly and relevantly, not that they will volunteer speeches as the witnesses did, to the amusement and amazement of our part of the world, in the great case of recent date. The legal theory is that between examination and cross-examination, the witness's visible supply of truth will soon be exhausted and his reserve tapped. Each side has, and generally must have, a theory of the case; to be supported as to matters of common observation, so-called "facts," by the testimony of ordinary witnesses to what they have apprehended, or think they have apprehended, immediately by the senses; only they are not allowed openly to confess that they only think they have apprehended. They are told to tell "facts," as though they knew any facts except with the aid of the conscious or unconscious cerebration of their thinking apparatus.

As a rule, this part of the testimony is disposed of with comparative ease, leaving upon the jury's mind rather distinct impressions. As to matters of special knowledge each side supports its theory of the case by the opinions of experts, and the examinations of these gentlemen are at times drawn out interminably and often with the result of befogging and boring jurors to the detriment of the examiner. Let us illustrate—we have an accident case, so-called. The issues are, who was at fault? If defendant, then what are the extent of plaintiff's injuries, and the consequent reparation due to him? So far as the circumstances of the occurrence are concerned there are conflicting stories, and each attorney adopts, honestly, we will hope, that theory of

the case which best harmonizes them in his client's favor. He will not, knowingly, call false witnesses. He will not lure honest witnesses out of the jurisdiction. He will not consciously mis-state the law. But, probably, as a famous advocate and diplomat once said, "It will not be his chief effort to elicit all of the truth that tells against his client." When it comes to the medical theories of the case, the diagnosis and prognosis, the attorneys must necessarily resort for them to medical men, who, if honest, will make as thorough and fair an examination as possible and advise the attorneys what, in their opinions, is the plaintiff's condition, whether it is attributable to the accident, and what can be said with reasonable certainty of his future history. Such information is absolutely necessary to attain the ends of justice, and therefore physicians were among the earliest experts called for the enlightenment of the court. They will always be necessary. The question now agitated is whether we shall go back to what it seems was the ancient method of allowing the court to select experts of quasi judicial character to inform it, whether we shall adhere to present methods by which opposing counsel having chosen their witnesses beat the truth out of them, or, sometimes, keep it in them by pitting them against one another under examination and cross-examination, or whether we shall make a blending of these methods. It is not within my province to-night to examine these proposals or the objections to them. That has been done already better than I could do it. My only function is to point out what defects are in the very nature of expert testimony, and what are in our methods of adducing testimony.

It is objected that under our present system experts become partisans—"hired advocates," as we lawyers are called by those deeply conscious of their own unselfish virtue—medical counsel who, unlike legal counsel who rarely if ever testify, go upon the witness stand to plead a cause,

not to tell the truth. I have already intimated my belief that this opinion is exaggerated. Experts are unprincipled sometimes, of course; but I do not believe they are so—I should bitterly regret to think they were so—as a rule, and prefer to think the criticism superficial. In a celebrated trial for murder, medical and chemical experts of the highest personal and professional reputation were subjected by some to very harsh condemnation because of their differences in opinion as to the possibility of diagnosticating morphine poisoning from symptoms alone. But it seems to me that to one reading the record of that trial carefully, these inferences become largely reconcilable, leaving no reason to impugn good faith. It may well be questioned whether a different result would have followed if the scientific witnesses had been official experts or had passed State examinations and registered as it has been suggested all experts should be required to do before being recognized as such. Certainly if the experts in that case differed corruptly and not honestly, if they espoused under oath theories they did not believe, we might well despair of the honesty not of physicians only but of mankind. It would be fortunate no doubt, if as a general rule in every case each party could have medical counsel to frame the medical theories of the case and suggest physicians or surgeons imbued with those theories who might be called to testify in support thereof. We may concede that it is a theoretical defect in procedure that compels us to call an adviser as a witness; but before essaying to remedy the defect by a rule forbidding such practice, it is to be borne in mind that occasions may often arise when the witness may necessarily have to be also the instructor of the side calling him. If, for example, in the day of Jenner a case had turned upon his much opposed theory, would he not have had to be called both to advise and to testify? Many like illustrations will suggest themselves, and it is not to be forgotten

that every advocate wants to know what his witnesses will testify to before calling them, that he is entitled to call any one who can testify honestly to a theory that sustains his client's cause, and that, if need be, he has a right to learn that theory from the person who may be the only available witness to maintain it.

It is, perhaps, in qualifying the witness that our procedure is most defective; and beyond doubt much of the disrepute into which medical expert testimony has fallen is due to the fact that our courts, through laxity or inability to test special fitness, too often allow incompetent men to testify as experts. There is at present no certain standard in this regard for judicial guidance. The latest utterance of our own Court of Appeals upon the subject is in the case of People v. Rice (159 N. Y., 400), which holds that a license to practice medicine while *prima facie* truth of expert competency is neither conclusive nor essential. Upon that point the general rule seems to be that any physician may be admitted to give testimony in any department of medicine; but there are jurisdictions in which it does not obtain; and I do not think that medical men themselves are disposed to regard it with favor. One of your own profession (Dr. Pearce Bailey, Medical Record, March 4, 1899), in writing lately, upon the medico-legal relations of traumatic hysteria, declares the result of his observation and experience to be "that a large number of medical witnesses who qualify as experts in litigated causes of traumatic hysteria have no rational conception of what hysteria is, and are totally unable to give an expert opinion in regard to it." From this premise he infers that no matter how honest or distinguished such practitioners may be, their testimony is "fatal to all attempts to arrive at the truth of the issue." Possibly a wise system of examination might secure a permanent class of highly qualified experts, but it is more likely that the system's value would lie not so much in securing

competent men as in excluding ignorant pretenders to medical knowledge. As it is now, counsel in great cases seek the best learning they can find; yet a layman's clever cross-examination may discredit a witness reputed to possess and, in fact, possessing knowledge far greater than that of the class who would be most likely to aspire to positions upon a State board or care to be listed in a class of professional witnesses. In the murder case already referred to, a gentleman of national repute, an authority among medical writers testified that in his opinion opium or morphine poisoning could not be positively diagnosticated from symptoms alone. He said that he based his opinion on his reading and very largely on his own experience. His cross-examination was very brief. It consisted substantially in asking what was his experience, and the number of cases to which he had been personally called in recent years. He admitted with perfect candor that within twenty years he had seen but three cases of opium poisoning, and one case of morphine poisoning. Having admitted that what convinced him of the cause of death was, in one case, the autopsy, he was then asked whether he had ever diagnosed such a case without an autopsy, and also asked whether he thought himself competent with this limited experience to testify against physicians who in the same time, had seen seventy cases and were constantly seeing them. No one well informed in the premises doubted the learning, candor and ability of the witness, nor could exception be taken to the cross-examination which deprived his testimony of any force. No law can be framed constitutionally that would preclude such a cross-examination. And it is food for thought whether it would be desirable to have members of a State board frequently put through such a course of questioning.

Another defect in procedure is said by experts to be that we lawyers will not let them tell the truth even when they

want to. One distinguished gentleman who has testified very often as a chemical expert, in a letter written to Mr. Tracey Becker and by him incorporated into an interesting paper before the Central Medical Club at Buffalo last year, thus complained: "In all my employment I have found the task of keeping the counsel who was to examine me in chief within the bound of my convictions much more troublesome and difficult than the most searching cross-examination." This is a sad picture of chemical counsel struggling with legal counsel on the same side for a chance to tell the truth; and obviously there is no remedy for such a state of things except to let the expert address the jury as M. Bertillon lately did in France, or submit his written opinion. But with all due allowance for undue zeal, or the inability of many examiners in chief to develop the case, we may still consider this dictum to be about as sweeping as the assertion of Mr. Dale, of the Philadelphia bar, under whose leadership the bill drafted by a committee of the Pennsylvania State Bar Association to regulate expert testimony was referred back to committee without approval at that Association's meeting last summer. He said, "we all know that men whose minds are devoted to the subject of insanity acquire a peculiar bent so that the large majority of the eminent men who have studied insanity and are called upon the witness stand to express an opinion as to the mental status of any particular person, will invariably and with entire honesty, state that those men are insane;" and, in the spirit of prophecy, he said that if the bill should become a law, successful prosecutions for murder would in that commonwealth be at an end.

Still another defect, as some take it, in our method of eliciting expert knowledge is the hypothetical question; and the bill of the Pennsylvania Bar Association just referred to proposed to do away with it entirely. But on the other hand, our courts have expressed themselves often as con-

sidering the hypothetical question the best if not the only means of eliciting opinion. Time does not suffice to discuss this topic in detail.

To the minds of many, it is in the contingent fee, especially in connection with lack of qualification that the source of most of the corrupt practices on the part of the lawyers and experts is to be found. As you know, acceptance of a contingent fee was once considered disreputable among attorneys. We all remember how slyly Sam Weller slipped into his testimony the remark that it was very honorable and generous of Messrs. Dodson and Fogg to take the Widow Bardell's case " on Spec." But the widow won from the jury nevertheless, and contingent fees were taken notwithstanding their theoretical impropriety, based upon the idea that all persons, attorneys not excepted, will lie and cheat in their own interest if given a chance,—a reason for which persons in interest were formerly forbidden to testify. Now our Code expressly allows contingent fees to be taken by attorneys, whether wisely or not we will not consider; that, too, being a point upon which expert opinions differ. Parties now may testify in their own interest, even prisoners charged with crime. With all these classes of witnesses, the jury is directed to consider their interests in weighing the evidence; and it certainly seems proper to show to the jurors what interest the expert may have that they may consider it, although in this regard courts and counsel are generally considerate of the witness—it will then be for the jury to weigh expert testimony and decide how far the balance is affected by motive. It is our belief in the freedom of the judges from bias that, probably, more than any other reason differentiates in the public mind their opinions from those of scientific experts. Yet while we thus believe in the honesty and fairness of our judges, conspicuous examples are not lacking where their opinions have been assailed by large numbers of persons who, whether right or wrong, have

firmly believed their determinations to have been influenced by extra legal reasons operating conciously or unconsciously upon the judicial mind. Thus the London Law Times of December 18, 1897, suggested that "it is curious that politics took sides perhaps involuntarily" in deciding the case of Allen v. Flood above referred to. The same periodical in the following week cited from a speech of Lord Brougham to show that in his very recent day the decisions of English judges could be predicted from their political leanings. In our own country there are those who think, wrongly let us hope, that the decisions of the Electoral Commission and of the Surratt and Income Tax cases, while not due to gross pecuniary motives, were due to influences outside of the record. But in mentioning these cases I cannot make it too clear that personally I am far from sharing such beliefs, nor do I believe that even a small percentage of members of the bar entertain doubts of the judicial fairness. The examples are cited only to show that even our highest and purest sources of opinion will be suspected and assailed by those prone to think evil whenever there is plausible ground for suspicion; and therefore it is not to be wondered at if men, even of reputation and character, fall under condemnation when their testimony is given or supposed to be given in the understanding that their reward will be large or nothing, according as the theory for which they are called shall prevail or fail.

The last objection to our present system of eliciting expert opinion is that it begets intolerable prolixity, due often to counsel's lack of preparation, sometimes to his exuberance of knowledge. In the courts' power to limit examination and cross-examination within reasonable bounds, some see a remedy for this evil; but here again to discuss the remedy would be to transcend my own limits.

The subject as you know is not new and abounds in difficulties. We are not to determine the questions it suggests

to-night; but we will achieve something towards its determination, perhaps if our discussion sets lucid minds to work upon the problem. How vexed that problem is a few recent examples will show. In 1898, a bill was introduced into the New York Legislature framed by a conference of physicians and lawyers appointed by various learned bodies of this State. When it was read in the State Bar Association by the delegate of that body, it met with some approval, but with so much more dissent that upon its reference back to committee with instructions to report, that latter body considered it not worth while to take further action in the premises. In the following year, that is to say, at the last session, another bill, approved I think by this Academy, failed to become law. The bill of the Pennsylvania Association already referred to was carefully drawn, following in the main the lines of Judge Endlich's address to that body, which you may find in volume 32 of the American Law Review at page 51. It, too, was referred back to committee, after an interesting discussion that will appear in the Association's report which I cannot even summarize in my brief time although advance sheets have been sent to me with great courtesy by the secretary.

In Illinois, a report was made last summer to the State Bar Association by a minority of a committee appointed to consider the subject, the majority not having convened. That report is terse. Avowing inability to formulate legislative remedy for the evil that we all admit, it expressed an opinion that such remedy can be found in the exercise by the courts of their existing prerogatives, and in the cultivation of high professional standards by bar and faculty.

What has struck me more than anything else in reading the various essays and reports upon this topic, is the small consideration given to definitions, which are the starting points of accurate inquiry.

At the risk of uttering trite knowledge, let me remind you in closing how vague our ideas are apt to become upon matters whereon we feel assured. The line between opinion—evidence, and evidence as to fact, is as vague as that between sanity and insanity. Statements of "opinion" and "belief" differ from "statements of fact" only in that the first two, which are usually convertible, indicate the witness's consciously reasoned judgments short of certainty or convictions; whereas the latter are expressions of his certain judgments based upon perception and unconscious reasoning or inference. It has been often pointed out that we use the word "belief" to express our flimsiest guesses, as well as our deepest convictions. We say, with reverence, that we believe in God, and with carelessness, that we believe it will rain before the week is out. What we assert absolutely as the perception of our senses, is often only inference. A man was lately sentenced to death upon an honest witness's testimony that he saw the prisoner chase, stab, and fall upon the deceased. Upon a new trial, it was shown that while the prisoner did pursue deceased, it was the latter who in his flight drew the knife and, essaying to turn upon his pursuer, fell upon it and died, the prisoner falling upon him. What the first witness saw was the pursuit and the flash of the knife. The stabbing was his inference due to the perspective from his point of view, but it was accepted as a fact. Pardon me if I recall the commonest deceit of our untrustworthy senses. Squibsters and their readers have laughed inextinguishably over Deacon Jasper's preaching, that the "Sun do Move," but Jasper and his congregation see it moving every day, and know that if the earth turned over they would fall off. For sixty-seven hundred of our planet's seven thousand historic years, every one was of Jasper's opinion. Ptolemy apprehended that the earth's diurnal rotation would account for many unexplained phenomena. But there was the lack of varia-

tion in the perspective of fixed stars and other stumbling blocks; and so his geocentric theory was accepted until Copernicus and Kepler came along the other day with their larger explanations, and now the semi-educated laugh loudest at Jasper.

But how many here to-night would venture to enter the list with Ptolemy in support of the heliocentric theory as against the geocentric? Some I have no doubt. Mr. Lewis, I feel sure; but not I, for one—with my remembrance from college days that Benjamin Pierce, the giant of our mathematicians, once said that Ptolemy's theory would reconcile all phenomena as well as the Copernican only by such a complexity of reasoning as few minds could grasp; wherefore science adopts, as always, the simpler hypothesis, trusting that in the great autopsy of the universe the latter day experts will be proved to have been right. Witnesses, whether experts or laymen, are constantly hectored and called upon to testify to "facts" by attorneys who have little realization of what a "fact" is, and no habit of questioning the testimony of their senses. Apropos of this you will appreciate a recent utterance put forth in Tremont Temple, Boston, on the 5th day of this month by a gentleman, of whom I would speak with great respect, reputed to have been a friend of Mr. Lincoln, a district attorney under Mr. Cleveland, a former judge, and so sincere that he declined renomination to the Bench in order to do a work that you and I scarcely consider worthy of such a disciple. Here it is: "My only Art will be the simplicity and courage of conviction, my only argument a statement of facts; and after all, how resistless is the potency of a fact? The sole purpose of inquiry in every Court of Justice in Christendom is, and ever has been to invoke facts; the world is weary of theories, it longs for facts; it is surfeited with dogmas, arguments and platitudes, and cries out for facts."

Now what do you suppose the "facts," the indisputable facts, were to which this worthy gentleman, judge, and lawyer,—presumably habituated to weighing evidence,—fancied he was testifying? Why, that God Almighty had failed to make his Gospel clear until 1866, and had then revealed it to that very shrewd lady of Massachusetts, Mrs. Mary Baker Glover Patterson Eddy, whose new Evangel of Spirit and Health this estimable gentleman is preaching, as one of the board of lecturers of the First Church of Christ Scientist, led thereto, as it would seem, by the "knowledge" that Christian Science had cured him of asthma, and therefore that its droll theories are all "facts." Need I recall your former confrère of this city, Doctor Dexter, and that worthy judge of our supreme court associated with him, Edmonds, whose book, full of recent letters from Lord Bacon, contained also appreciative communications from persons who, sentenced to death by the judge, returned to thank him for the kindness and consideration with which he had performed that somewhat unpleasant duty. Need I suggest that to-day keen and trained intelligences are declaring that from an obscure woman of Boston, they are receiving absolute demonstrations of immortality, by events, strikingly similar to those with which other wanderers in the same region have familiarized us? Certainly a theory, especially if it promises to make its promulgator a shining figure in the ranks of time, does wonderfully influence the power to observe facts. We believed myopic Zöllner when he told us of the distant stars; but we doubted when he said he saw Slade tie knots in endless chains, push articles of matter through a material table, and thus afford evidence in support of the great epoch-making discovery that there is a fourth dimension in space.

At the fountain head of our difficulties with expert testimony lie fundamental sources of error and uncertainty.

No consideration of remedies is adequate that disregards them. Discussing the matter, we wander among parodoxes. Shall we accept the experts' conclusion or the jury's verdict? Shall we go with the extremists, who sometimes seem to travel in a circle,—as did he who starting to prove that only expert testimony was reliable, concluded that imposters and thaumaturgists preferred to be investigated by clergymen, physicians and lawyers, rather than by laboring men and children,—or shall we walk safely with our wise, conservative, Horace, in the middle path?

THE PAST, THE PRESENT AND THE FUTURE OF THE MEDICAL EXPERT.

By Theron A. Wales, M. D., Chemung County.

When I saw the title of my paper in print I was forcibly reminded of the venerable story of the clergyman who preached on "The World, the Flesh and the Devil," in which he said he would "dwell briefly in the world, touch lightly upon the flesh and hasten on as fast as possible to the Devil." Emulating his illustrious example, I propose to dwell briefly on the past, touch lightly on the present and hasten as fast as possible to the future of the medical expert in lunacy.

The arrangement of this discussion suggests also an early boyhood reading, in a work on Natural History, where, concerning the habits of the elephant, it was said that these huge, but sagacious beasts, when coming to a stream of whose quicksands they had no knowledge, they incontinently tumbled the smallest elephant of the troop into the water, and if he successfully floundered across, then the larger ones followed. If he went under, the rest kept out. Our genial chairman, upon this occasion, has seen fit to reverse this order, placing the veterans in front and allowing the diminutive member to non-impressively bring up the rear.

But to keep my promise. Of the past of the medical expert I am not deep enough a student to say more than that as early as 1853 Forbes Winslow, in his Lettsonian Lectures on Insanity, deplored the fact of the conflict of medical opinion on the question of lunacy when summoned in the courts.

Crossing the ocean to our own country, we find that here such little incidents have occasionally been noted, and the

incidents have increased in frequency, until the spectacle of a murder trial, in these latter days, is a wonder to Gods and men.

One of the earlier and most striking use of the medical expert in lunacy in this country, was in the murder trial of Hiscock, accused of killing a man who, it was alleged, had been unduly intimate with the murderer's wife. At this trial, the then novel plea was introduced of emotional insanity and grave and learned physicians were placed upon the stand and as gravely they swore that they believed a man could be sane one minute and insane the next, then back again, sane again, like the "off again on again Finnegan" of the popular music hall ditty of the day, reminding one strongly of the old Greek apothem, "Heymetha micra mania," which, being interpreted, shall mean, "Anger is a short madness."

The District Attorney, perhaps, not being well up on the insanity dodge, not prepared to furnish an array of medical experts to outswear the other medical experts was, as you may say, check-mated or over-trumped and the jury brought in a verdict for acquittal.

Since then the defense of insanity, in some form, in murder and other trials, has become common and the District Attorneys correspondingly sharpened, prepare themselves with a long list of alleged medical experts, with whom they controvert the medical testimony of the defense with the diametrically opposed medical testimony of the prosecution. Indeed so much of a spectacle has this become, that the subjoined item, cut from a current newspaper, expresses the popular feeling in a great degree.

"Great interest is manifested in the effort to prove, in court, whether or not Edward Holden committed suicide. Again expert testimony is called into play, and again the public opinion of the nobility of the medical profession will take a drop. Expert medical testimony, as it is now accept-

ed, is as useless as it is expensive. For every expert that is put upon the stand by the one side, one of equal ability and reputation can be put on by the other. The testimony thus given usually resolves itself into an affirmative or a negative answer to a hypothetical question which can only be answered in the way desired by the side propounding it. And at its close the jury knows precisely what it did at its beginning."

As I have already said, in recent years medical expert testimony is in the field in large numbers and the juries in our courts have come to regard expert testimony with weary indifference, unless they know the scientific competence of the witnesses and their absolute fairmindedness in the case.

Says a recent writer: "These experts testify that Blank was accountable for his acts; that he was not accountable for his acts; that he was sane, insane, their opinion depending apparently upon the source of their retaining fee. Indeed, wherever a plea of insanity is entered in a criminal case the same farce is re-enacted, experts of all shades of expertness swearing themselves black in the face by all the ghosts of alienists dead and buried, in direct contradiction of each other.

"So far as this testimony has any effect in inducing a just, sober and merciful verdict, it is as hollow as the tipstaff's cry on opening the court."

"Two perfectly impartial men may differ over a case, but an honest difference of opinion is another thing from the quarreling of rival hosts of paid experts, contending as fiercely for their clients as if they were lawyers instead of witnesses."

"In view of the invariably antagonistic character of the testimony under consideration, is it not time that some step be taken whereby it can be lifted out of that abyss of humil-

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*Dr. D. Colvin.

iation in which it has so long been floundering, and a change be brought about, to the end that the expert shall no longer be considered as occupying no higher position in the court room than one who can only testify to simple facts which happen to occur under his observation."

I once heard a physician admit, in answer to a question, that he was "*retained*" by the defense, the side for which he was then appearing. This was unfortunate; but, in my eyes, not more so than to see a physician sitting with the lawyer and taking active part in the cross-examination of the opposing "*experts*," after having already appeared as an alleged scientific witness in the same case on the other side.

Small wonder that it has been facetiously, if not truthfully, asserted that the main purpose of expert testimony to-day is to "confound the jury, confuse the court, and pervert the ends of justice." Says another medical man: "Doctors who are ambitious to pose as experts and secure the emoluments thereof, are said sometimes to linger about law offices, courting favorable attention and awaiting demands for their services, as has been said, like vultures hovering over a prospective battle-field waiting for the spoils." Such doctors incited by the promise of liberal fees, and flattered by the attentions and blandishments of the men of law, will condescend to search authorities, look up points and precedents, and advance suggestions to assist counsel in achieving a victory sometimes entirely irrespective of the merits or demerits of their causes.

Of course, the witness feels naturally averse to the admission of anything that will militate against the side he has espoused, resorting to evasion and equivocation where he dare not positively affirm or deny. He is cajoled, or badgered and brow-beaten by counsel whenever he attempts to tell an unwelcome truth. And it is only by catch questions

* Dr. H. O. Jewett.

from opposing counsel that he is induced to divulge any facts prejudicial to the cause of his employer who has selected him and guaranteed the bonus for his services, thus acting the part of hireling or co-advocate, instead of the impartial witness which he is sworn to be." But there are two sides even to this statement and I hope later on to show that an honest medical man may espouse an honest cause and furnish to the attorneys such assistance as his special training has fitted him for, to aid in the administration of justice or as protection to those unfairly accused. In short, that the medical expert may not only appear as a dispassionate witness but may, without dishonor, appear as a medical expert advocate, but that he should not assume both characters at the same time.

A writer in the "Journal of the American Medical Association" remarks, "Even when medical witnesses would fain confine themselves to facts and well-established truths, they are grouped upon opposite sides of a disputed case involving questions of science. The lawyers, acting as generals, lead the experts up to conflict, enthused with the idea that truth is the great object of the struggle, whereas neither party cares a fig for the truth, *the winning of their case* being paramount to all other considerations. A word here as to the medical man upon the stand.

There are a few terms used in the law which could be borne in mind by physicians in the witness chair with advantage, not because they are always consistent with medical facts, but for the reason that the medical witness may answer more intelligently with the possession of such knowledge—but a man of experience, Dr. Hamilton, gives a word of caution to those who are inclined to wander into the fields of a profession to which they do not belong. He says: "The medical man called to the stand should confine himself to insanity as a disease and should avoid the floundering which must follow when he uses legal terms, and at-

tempts legal distinctions." And I venture to add: But let him be clear and accurate on his own subject and, above all, not arrogate to himself knowledge, beyond what he is capable of substantiating. I remember hearing an expert swear that from a medical examination made in December he could tell whether the subject was sane or insane in the previous July. A degree of skill, sapience and sagacity to which few of us attain.

Another instance comes to my mind which occurred in a case tried in the northern part of the state, some years ago. The case was one of a suicide and the question to be determined: "Was he insane at the time of committing the act of self-destruction?"

Among the medical experts for the affirmative was a young doctor who gave it, as his opinion, that the man *was insane.*

On the cross-examination, the counsel for the defense asked: "What form of insanity was this man suffering from in your opinion?" "Oh," said the doctor, "a kind of low order of insanity."

And this man testified as an Expert with a big E.

The expert witness will wisely refuse to answer—at least so far as he may be made to pose as an expert in any other field than his own. In one case, the writer was asked to define the human mind, to which the judge suggested that he answer as in the old colloquy, "What is mind?" "No matter," "What is matter?" "Never mind."

It certainly is unwise to pose as a person of more than ordinary ability, and therefore we should not tincture our answers with anything extraneous. We are not warranted in ventilating any extreme views or theories. A prominent writer says: "The flippant witness is sure to injure his case by trying to raise a laugh or by an attempt at repartee. He will find, to his cost, that the lawyer on the other side is listening and awaiting his chance to turn the laugh upon

the unfortunate jester, and to create in the minds of the jury a prejudice which is extremely uncomplimentary, as well as injurious to the case. In fact, even a thoughtless answer may destroy the weight of all the sound testimony that may have been given before.

Upon one well remembered occasion, the present reader was asked: "Do you agree with the opinions of the witness who preceded you?" To which I replied thoughtlessly: "Yes, substantially."

Ah, that unfortunate "substantially." Why could I not have said simply "Yes," though I did disagree in a minor way upon some small opinion of his in regard to petit mal. But it lead me through a long intricate and painful cross-examination, of no value or purpose, but highly profitable in all my subsequent experience on the stand.

Medical witnesses are very often asked whether insanity can exist without disease of the brain and the assumption is that it can. While it behooves the medical man to be exceedingly cautious, he may safely say that although our instruments of research do not always reveal to us the signs of disease after death, there can be no doubt but that insanity is always due to some organic change; but the statutes and procedure of the state of New York ask simply did the accused know the nature and quality of his act, and did he know that it was wrong? The brain of Martin Strait, who was tried three times for murder, in Chemung county, in which the defense was insanity, showed no change after death.

It had been my further intention to touch upon that alleged calamity, the hypothetical question; to consider more elaborately whether a physician could appear as an advocate when not appearing as a witness and various other minor points, but I must leave these. And, too, I wanted to say a word of the distress of an examination by a lawyer who has no knowledge of the subject of insanity,

but time does not permit, so with a hop, skip and a jump I hasten to my conclusion.

Medical expert testimony is as yet indispensible to the proper administration of justice.

Its abuse, not its use, deserves criticism.

The abuses are:

I. Mingling the functions of advocate and witness.

The services of an expert are as necessary to a lawyer in presenting and trying his case as in preparing it, and certainly no lawyer would attempt to prepare a case involving special and complicated medical or surgical evidence, without the aid of an expert, whose presence at the trial is equally indispensible. New matters constantly arise on the trial, and in the examination of witnesses which make the aid of the expert necessary. This aid should be openly and not surreptitiously given.

But this makes this expert an advocate and he should not appear as a witness.

II. The mere fact that a man is entitled to write M. D. after his name does not always qualify him as an expert witness.

In surgical cases, he should have special skill and experience in surgery; in insanity cases, special training and experience in the examination of the insane.

In short, he should be a *real expert.*

III. The unnecessary number of expert witnesses.

One skilled and experienced expert on a side with one appointed by the court is better than a dozen.

The jury want simplicity and conciseness.

The right of cross-examination of these experts should be strictly maintained.

To close: The present system is the result of hundreds of years of judicial procedure and it should be disturbed as little as possible. There should be no expert-advocate witness. And the ordinary medical practitioner should be ex-

cluded from being an expert witness; except that any practitioner should be permitted to specially qualify as an expert.

This could be easily done by making simple rules for proficiency and giving the court larger power in passing on the qualifications of expert witnesses as shown by preliminary examination.

I would also give the court power to fix and limit the number of expert witnesses to be sworn in every case, and this should be done by motion before the trial upon affidavits.

With these modifications the present system would be satisfactory and useful.

THE NECESSITY FOR STATE AID IN PULMONARY TUBERCULOSIS.

By George W. Golder, M. D., of Monroe County.

For a period of years, as shown by the official reports of the New York State Board of Health, the number of deaths reported from consumption in New York State has averaged 13,000 per year. Upon this basis, assuming the average life of a consumptive to be four years, there are always to be found in the State of New York more than 50,000 cases of consumption.

During a similar period of years the average number of deaths reported from acute respiratory diseases was over 17,000 per year. If to the reported deaths from consumption there are added the number of persons dying of consumption, but whose deaths are reported as due to intercurrent attacks of acute respiratory diseases, the number of deaths and the recorded number of cases of consumption would manifestly be largely increased.

The cost of this enormous amount of preventable illness is considerable. Taking the reported deaths from consumption at 13,000, and assuming that one-half of these persons would have had an earning power of but $200 during life the sum would amount to $1,300,000. Expense of caring for sick at but $200 each, $2,600,000. If but one thousand families were left wholly or partly dependent, and the families received an assistance from various charities of but $100 each, the sum would be $100,000.

As consumption is so largely a disease of city life, the cost of consumption to the cities in the State may be approximately computed by referring to the table below, which shows the deaths from comsumption and from acute

respiratory diseases, together with their percentages of deaths from all causes, for the nineteen largest cities in the State. For the suppression of consumption the State as yet has given no aid. It has been proven to be both a preventable and a communicable disease. It causes untold misery, much poverty, nearly one-ninth of the reported deaths and really one-seventh of the deaths from all causes. Its influence upon posterity in its causation of inherited tendency is profound. At the lowest authoritive estimate it is curable in twenty-two per cent. of cases. The State, however, withholds its aid, though the reasons for doing so do not seem clear, if the cost of beginning aid be excepted. For the suppression of other diseases more tragic in their course than consumption, the State spends hundreds of dollars yearly.

For the insane and the insane epileptic the State expends about $7,000,000 yearly. 22,000 insane, of which eight per cent. die annually, and of which at best twelve per cent. are curable, are supported by the State, in its system of State Hospitals. For the epileptic population in the State, estimated at 13,000, a beginning has been made at the Craig Colony at an expense for grounds and buildings of $215,000 and an annual expense per capita of $450. Insanity and epilepsy are tragic diseases attended by acute mania and convulsions. The one violently dangerous to the patient and the public; the other, chiefly dangerous to patient and a burden to his relatives. For the one, public safety has demanded a hospital; for the other, public sentiment has demanded an asylum. The average duration of life of an insane person after admission to a State Hospital is about twelve years and the cost, at the average rate of maintenance of $186 per year, is $2,232. This, including loss of earnings for the period at $150 per year, $1,800; for buildings, furniture, etc., the hospital expense allowed by the State is $550; interest at three per cent. makes a total

of $6,231 per capita for the twelve year period. For the epileptic, the duration of life in an institution must necessarily be long. At best but six per cent. of the cases of epilepsy are curable.

Consumption, unlike lunacy and epilepsy, is not a tragic disease. Its victims often long possess a semblance of health. A little loss of weight, a little cough, a little fever, a little loss of strength are often all the symptoms that mark the beginning and sometimes even the end of consumption. Dangerous to himself, as shown by the large death rate, insidiously dangerous to relatives, friends and to society at large, the poor consumptive yet pursues his way uncared for, so long as strength and life hold out, to finally retire into home, public hospital or almshouse to die, usually a slow death, and in dying to endanger the lives of many others. To society, which is more dangerous, the maniac, the epileptic or the consumptive? The insane of New York State housed in institutions number 22,000, of which twelve per cent. at best are curable and eight per cent. die annually. The epileptic number approximately 13,000, of which an unknown per cent. die annually. The consumptives number approximately 50,000, of which at least twenty-two per cent. are curable and nearly twenty-five per cent. die annually. The insane are comfortably housed in the State Hospitals. Provision is being made for the epileptics. The consumptives have no place provided for them. Even adequate protection against the milk of tuberculous cattle is denied the people of the State. For the insane and epileptic the State expends millions; for the consumptive nothing.

For consumption the loss in health, in life and in money, as herein given, has been underestimated in every way. The money now spent but furnishes asylums for the dying. It is therefore wasted in so far as any rational results in the prevention or cure of the disease is concerned. As

pointed out elsewhere special sanatora, controlled by the State at comparatively small cost, should be furnished for incipient cases of tuberculosis, where quite 70% of cures could be realized. Such institutions offer hope for the future in both preventive, curative and educational work in tuberculosis.

SANATORIUM TREATMENT AT HOME FOR PATIENTS SUFFERING FROM TUBERCULOSIS.

By S. A. KNOPF, M. D., New York County.

This title in itself will tell you that I have no new antituberculous remedy to offer. Even the system of treatment to which we have to refer frequently, is not new. Many (1), and myself among them (2), have described the typical sanatorium treatment for consumptives before. The only excuse I have for appearing before you is my hope that what I have to say of the system, as applicable by the general practitioner in the house of the patient, may arouse an interesting discussion from which none can fail to profit, and through which the cause of modern phthisio-therapy will certainly gain.

Years of study of the treatment of consumptives in special institutions has made me an enthusiastic advocate of this therapeutic system. The insufficient number of sanatoria in proportion to the number of consumptives, has led me to treat many a patient as best as I could by imitating the

(1) Dettweiler, P.; "Die Behandlung der Lungenschwindsucht in geschlossenen Heilanstalten." Berlin, Reimer, 1884.
Brenmer, H.; "Die Therapie der chronischen Lungenschwindsucht." Wiesbaden, Bergmann, 1887.
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Petit, L. H.; "Hygiene des Senatoria." Revue de la Tuberculose, Decembre, 1894.
Otis, E. O.; "The Sanatorium or Closed Treatment of Phthisis." New York Med. Journal, June 13, 1896.
Trudeau, E. L.; "Sanatoria for the Treatment of Incipient Tuberculosis." Medical Record, February 13, 1897.
Walters, E. R.; "Sanatoria for Consumptives." London, Sonnenschein & Co., 1899.
Bowditch; "Sanatoria in the Treatment of Tuberculosis." Medical News, October 14, 1899.
(2) Knopf, S. A.; "Les Sanatoria, Traitement et Prophylaxie de la Phtisie Pulmonaire." Paris, Carre et Naud, 1895. 2me edition, 1899.
"Sanatoria for the Treatment and Prophylaxis of Pulmonary Phthisis." New York Med. Journal, October 5 and 12, 1895.

sanatorium treatment at home. But before detailing what may be done under such circumstances, let us rapidly enumerate the essential factors of the typical sanatorium treatment.

There is first a so-called general hygiene; secondly, a special hygiene; third, an excellent table; fourth, an arrangement for the open air treatment; fifth, a hydrotherapeutic establishment; and last but not least, the constant medical supervision of the patient. To these six prophylactic and therapeutic factors we must adhere, no matter what the climatic conditions.

General Hygiene.

Let us presume that for some reason or other the patient must be treated at home, and that he lives in a city. If he has no home of his own, he will probably consult his physician as to the best place for a residence. I would tell him to try to live and work in the highest portion of the city; seek a quiet neighborhood, where there is relatively little traffic. If the patient can reside in the outskirts of the city on high, non-malarial ground, so much the better. The largest, sunniest, quietest and best ventilated rooms, preferably on the second floor, so as to avoid the fatigue of climbing stairs, should be selected. If the dwelling is a modern apartment house with elevator, the top floor, of course, would be the best of all.

In the room mainly occupied by the invalid, velvet or plush covered furniture should be replaced by such as will not accumulate dust. Raising dust by sweeping with a broom should never be allowed in any sickroom, but particularly not in one occupied by a pulmonary invalid. A moist mop should be used to remove the dust from the floor, and the furniture should be wiped carefully. The carpet, heavy curtains and superfluous furniture should be removed, without, however, leaving the room cheerless.

Small rugs and curtains that can be washed may be retained.

A tuberculous patient should always sleep alone and in a bed which should be freely aired during the daytime. A very weak patient who does not leave the bed, should, whenever it is possible, have a second bed placed in his room so as to be able to change. A brass or iron bed with wire mattress, is preferable. Feather beds should not be used. The bed should be placed with the head against an inside wall. Drafts should be avoided as far as possible, but this precaution must not be carried to extremes, so as to make the patient afraid of a breath of fresh air. If the bedroom is too small to place the bed so as to avoid the direct draft from the open window, a substantial screen should be used as a protection. Under the heading of general hygiene we comprise, of course, sanitary plumbing, a sufficient supply of hot water, and for heating purposes, an open fireplace whenever practical.

Special Hygiene.

The special hygiene deals with the careful disposal of the sputum and other secretions which may contain the bacilli; the care of the patient's linen, and finally his clothing and manner of dress. To an audience of physicians and sanitarians there is no longer need to speak of the importance of the precautions to be taken with the tuberculous sputum, and I shall confine myself simply to the description of a few utensils which I think indispensable in a private home, hospital or even dispensary of consumptive patients. They are to my mind the best means to stop the propagation of tuberculosis through carelessly deposited tuberculous expectorations.

Here is an ordinary enameled iron spittoon. To make sure that the sputum reaches it I recommend this simple stand which is elevated three feet from the ground. The

cuspidor is supported by a metal ring attached to the door of the cupboard. The patient desiring to expectorate opens the little door, thus bringing the spittoon within his reach and closes it again when he gets through. An automatically closing extra cover makes it impossible for flies and other insects to sojourn in the interior. With this arrangement there is no excuse for missing the spittoon and soiling the brim. The unpleasant appearance of numerous spittoons placed on the ground in places where much expectoration is going on, makes the elevated spittoon preferable from an esthetic as well as from a hygienic point of view. The cuspidor of metal, elevated and covered, has advantages over the uncovered vessel of porcelain or earthenware, in that animals, such as dogs, cats, etc., will not be able to reach the contents of the cuspidor; there is also less danger of its bursting when placed outdoors at freezing temperature if covered and inclosed in a box. Again I prefer metal spittoons to glass or porcelain, because the persons instructed with cleaning them are not exposed to the possible danger of inoculation by breakage.

For a patient permanently confined I think this plain aluminum cup with cover answers all practical purposes. It is light and easily cleaned. Its general appearance is an additional advantage. This and all stationary cuspidors should be one-third filled with some antiseptic solution, preferably wood-vinegar. For those who can conveniently destroy the sputum by fire, Seabury & Johnson's well-known paper spitting cup is a handy and useful utensil. I take pleasure in showing it to you in its new form with an aluminum frame and cover. Patients who are too weak to even make use of this light aluminum cup, should have at their bedside a number of moist rags, which should be burned immediately after use, or at least before they have had a chance to dry. For the patients who are up and around, and who go out doors, the pocket flask is the only

rational utensil to receive the expectoration. There exist a number of them. I have described the celebrated Dettweiler pocket flask, and also my own at several occasions before this. I have given detailed descriptions and illustrations of these and others in my recent book on tuberculosis (1) and will not now say more about them. I show them and confess frankly, I consider neither perfect. I hope some day to be able to present an ideal pocket flask, but in the meantime either of these will answer the purpose.

To encourage the use of the pocket flask one must make its manipulation and the process of cleaning it as simple as possible. I direct my patient to empty the flask into the water-closet or to fold a newspaper into several layers, pour the contents upon it and throw the whole at once into the fire, being careful not to spill any. One should, however, not forget to insist that the patient wash his hands carefully afterwards. Larger quantities of sputum, collected from the spittoons, should be gathered in a separate pot partially filled with water, and the whole be boiled for half an hour. To increase the boiling point by a few degrees, a teaspoonful of soda to each quart of liquid might be advantageously added.

Despite all our efforts some consumptives will not use the pocket flask because they do not wish to attract attention to their malady. These should use squares of muslin or Japanese paper handkerchiefs specially manufactured for that purpose, and which should be burned after use. But I should insist that they place in their pockets a removable lining of rubber or other impermeable substance which can be thoroughly cleaned. This additional pocket could be fastened to the inside of the ordinary pocket by clamps, and thus be of no inconvenience to the patient. Of

(1) Knopf, S. A.; "Pulmonary Tuberculosis, Its Modern Prophylaxis and the Treatment in Special Institutions and at Home." P. Blakiston's Son & Co., Philadelphia, 1899.

course, all individuals using handkerchiefs as receptacles for sputum take their chances of infection through contact with the expectoration, and they should be particularly enjoined never to touch food without having thoroughly washed their hands. The soiled linen of consumptive patients should be placed in water immediately after removal from bed or body and be handled as little as possible before that. The handkerchiefs especially, even if they have not been used to receive expectoration, should be washed separately or at least boiled before being given to the general laundry.

In the private home with loving friends and relatives about, everybody should be told that kissing on the mouth is unhygienic. The saliva of tuberculous invalids is certainly not free from bacilli. If the patient can not have his own table utensils, as forks, spoons, glasses, etc., it is well for the physician to insist that all these utensils shall be placed in boiling water for a few minutes after each using. In view of the undeniable fact that during the dry cough or while speaking loudly, small particles of tuberculous sputum or saliva can be expelled, the patient should be taught to place a handkerchief before his mouth during the dry cough. The danger of infection from these small particles of saliva, expelled while talking, is, however, relatively small, since the number of bacilli found in the minute drops of saliva are few, and the little masses are never expelled beyond three feet from the mouth of the patient.

In hospitals where many advanced consumptives congregate, the precaution to have the patient wear Professor Fraenkel's mouth mask, is doubtless of utility and constitutes a modern means for preventing the spread of tuberculosis. I take pleasure in showing you such a mask, the mechanism of which is easily understood. At the Charity Hospital in Berlin, all tuberculous patients are obliged to

wear such masks when in the common room, and only remove them while eating or expectorating. The patients soon become accustomed to the mask, as by impregnating the gauze, which is held in place by a metallic frame, with some medicinal substance they suppose it is to be worn exclusively for their own personal benefit. Bacilli are not infrequently found in the gauze. It is, of course, self-understood that the gauze, lint or cotton removed from these respiratory masks should be burned immediately, and the masks disinfected at regular intervals. In ordinary private cases the wearing of such a mask is neither practical nor absolutely necessary; but I would instruct nurses, relatives and friends not to approach patients unnecessarily close when they are speaking or coughing, or for any length of time.

As to the invalid's dress we may summarize the whole subject by saying he should dress sensibly, comfortably and according to the season. He should avoid heaping successive layers of underclothing upon himself, especially in the line of chest protectors. For underwear, Jaeger's or other similar sanitary wool suits of the lighter or heavier grade, according to the season, are to be recommended. In cold weather the outer garment should be warm but not so heavy as to hamper free movements. For ladies I recommend the Lady Habberton or Jenness Miller system of dress reform, which does away with the corset and the numerous skirts fastened tightly around the waist, and last but not least, the unclean and unhygienic mode of long trailing dresses. The footwear of all phthisical patients should be warm but never tight, and in wet weather, of course, they should wear rubbers. As a matter of personal hygiene I might suggest that long beards or thick untrimmed moustaches are often retainers of particles of sputum and thus may constitute a source of infection. Whether we may allow our patient occasionally a cigar will depend upon the

individual case. I never permit the smoking of cigarettes, and, of course, it is out of question to allow smoking in the sickroom.

Dietetic Treatment.

We now come to the patient's diet. My distinguished teacher in modern phthisio-therapeutics, Herr Geheimrath Dettweiler, is in the habit of saying "la cuisine est ma pharmacie." This maxim is as appropriate for the private practitioners who treat consumptives as it is for the sanatorium physician. When we treat a patient at home we must not only have a good table, but our cooking receipts and directions concerning his diet must be as faithfully followed as the prescription for medicine. A fair understanding of how to prepare good, nutritious and easily assimilated food for invalids is indispensable to every physician, but especially so to the phthisio-therapeutist. I hope the time is near when instructions in the art of cooking for the sick will be included in the curriculum of our medical schools. We all know the importance of dietetic treatment in pulmonary tuberculosis, but we are not always aware of the difficulties encountered when the patient is in his own home and has something to say about the daily menu. His aversion to fats, his not infrequent dislike of larger quantities of milk, and other caprices regarding the preparation of food or the time of taking it are matters which must be overcome; otherwise the successful treatment of a consumptive at home is an illusion. The culinary art will often do more for certain conditions of anorexia than will the administration of medicine. While we may not consider the patient's idiosyncrasies for certain dishes as well as for certain medicines, we must know how to distinguish idiosyncrasies from caprices.

I will give here briefly, what I consider, an average régime for a consumptive accustomed to our American way of liv-

ing. As soon as the patient awakes in the morning, while yet in bed, a glass of hot milk, half milk and tea, or half coffee and milk, with a slice of milk-toast, should be given him. After a little while he will rise to prepare for his douche, friction or massage, whatever the physician's prescription may call for. After this it will probably be nine o'clock, and the patient may take his ordinary breakfast. He should have eggs, and may have his choice as to their preparation—soft-boiled, poached, raw, etc., or in form of eggnog, with sherry or whisky. If he is accustomed to a meat breakfast, he should have broiled steak, chops, poultry, sweetbread, etc., or raw chopped beef. Bread a day old—preferably whole-wheat bread or French rolls, but not hot—with plenty of butter or honey, either milk, cocoa, coffee with milk, but not too strong, or a cup of bouillon, should also form part of the meal. Whether the patient likes to have his mush (cereals) for breakfast or supper, may be left to his choice; some fruit should always precede his eggs or meat in the morning. If fish is served in the morning it should be either broiled, boiled or baked.

The patient should take the heartiest meal between the hours of twelve and two o'clock (four hours after breakfast). Broths or soups should be the first course. Oysters and clams are most easily digested raw. Any kind of fresh fish may be served again at dinner, and in any form except fried; and there will be, of course, roast meat of some kind, rare roast beef, mutton, poultry, etc. Of vegetables, spinach is particularly to be recommended on account of the large proportion of digestible and assimilable iron. Next to this in nutritive power come lentils, peas, beans, cauliflower, potatoes. Fresh vegetables should be given whenever it is possible to have them. Lettuce and other salads, preferably prepared with lemon-juice instead of with vinegar, are permitted. Light puddings, fruits, and nuts may constitute the dessert. At about four or five o'clock

some milk with toast may be taken, or, if the patient cares for it, a cheese or meat sandwich. At this time the milk may be replaced by bouillon or chocolate. The supper should not be quite as varied as the dinner. Cold or warm meats, rice with milk or gruel, with jellies, fruits, etc. At bed-time again a glass of milk or some milk-toast.

It is, of course, impossible to lay down an absolute rule of what to allow and what not to allow. At times the patient may eat such edibles as ham, smoked tongue, and even pickled or salt herring, sardines or sardelles, as these articles seem to stimulate the appetite without producing any bad results. All bouillons and soups taken regularly at the principal meals aid the digestion by increasing the flow of the gastric secretions. Raw, scraped beef is a most valuable adjuvant in the feeding of tuberculous invalids. It is always indicated, but especially when meats prepared in the ordinary way do not seem to be digested very easily. The supply of meat-pulp for the day may be made in the morning, but it must be kept in a cold place, as it taints easily. It is better, when possible, however, to make it fresh just before it is to be eaten. The patient may take the pulp in any way he pleases. It can be eaten plain with pepper and salt, mixed with milk, with warm bouillon, with mashed vegetables, or with sweets. The latter method will make it tempting for children. It can be rolled into balls easy to swallow, or made into sandwiches with a few anchovies or a little anchovy-paste, pickled herring, or some other relish, according to the patient's taste. The yolk of a raw egg added increases the nutritive value of the meat-pulp. Thus it will be seen that the ways in which the raw meat may be taken are so numerous that it can be made palatable to almost any patient.

Goodly quantities of butter and cream are especially recommended for these invalids, and milk should be allowed at any time without restriction. Some patients, however,

in their eagerness to get fat, overdo in this respect. When drinking numerous glasses of milk between meals interferes with the meal-time appetite, the quantity should be reduced. Again, neither milk nor cream agrees well with some consumptives. To make milk more digestible, one may add to each wineglassful one-half or one teaspoonful of cognac, kirsch, or rum, with or without hot water. The addition of about six grains of bicarbonate of soda and five grains of common salt, dissolved in two tablespoonfuls of hot water, to each tumblerful will also increase its digestibility. Patients should be taught to eat regularly, slowly, chew their food well, and keep their teeth in good condition. When the weather permits let them take their meals outdoors. A patient who has fever should eat when his temperature is lowest, and only the most easily digested substances. Alcohol is indispensable in some cases, but it should always be dealt out carefully and preferably in the diluted form of egg-nog, wine or beer.

Open Air Treatment.

The open air treatment, that is to say, remaining in the open air during most of the day, is essential if we wish to make our hygienic and dietetic treatment at the home of the patient a success. The patient's bedroom is, of course, always airy, and day and night one or more windows, according to the season, remain open. Deep breathing is done as often as the patient thinks of it; regular respiratory exercises every half hour or hour; these exercises should be taught gradually, and as often as it is possible they should be superintended by the physician. A good rule is to tell the patients never to take their exercises when they feel tired, nor to the extent of becoming tired.

The restcure (or "Liegekur") on the reclining-chair is the most important feature of the open air treatment. For that purpose the patient may install himself in the garden near

the house, on the porch, on the balcony, roof or fire-escape, or near the open window. For those who have the advantage of a garden, an installation, of which I show you here a picture taken from my book, might make an ideal restcure arrangement. A large beach-chair of wicker-work such as is seen in seaside resorts is procured. After the seat has been removed the inner walls are lined with padding. A reclining-chair is placed with its back in the interior, and the whole arranged so that the patient is protected from the wind and sun. There the patient installs himself for the day, with his books or writing materials at his side, placed on a little table, on which his meals may also be served. Being light, the whole can be shifted whenever the wind changes and according to the position of the sun, so that the invalid's body may be bathed by the rays of the sun, while the head remains in the shade. However, a plain steamer-chair, padded with a quilt or blanket, and a large umbrella will answer the purpose where such an installation can not be arranged. The length of time to remain on the reclining-chair outdoors must be regulated according to the weather and the condition of the patient. But the endurance in this respect achieved by gradual training is simply wonderful, and cold weather, when the patients are warmly wrapped up, should certainly not be a hindrance to a prelonged restcure.

On the question as to whether we should allow our phthisical patients walking exercises, even if they have fever, all phthisio-therapeutists do not agree. Let me state briefly my position, which I have published before, and to which I still adhere. Restcure should alternate with walking exercises. The duration of a promenade for a phthisical patient should be regulated with the utmost care. One should begin with a walk of a few minutes and increase same until a walk of an hour or an hour and a half can be taken without fatigue. Whenever it is practicable the start should be

uphill, so that the return may be easy. After his promenade the patient's temperature should be taken. If it exceeds the normal it indicates overtaxed powers. Whether shorter walks or complete rest are then indicated will be decided by the variation of the temperature before and after exercise. When the temperature of the patient only rises slightly in the evening (99-99½ F.), short walks in the morning, while in the apyretic state, may be permitted. A lasting temperature of 100 F. or over is an absolute contra-indication to exercise. Tachycardia should also be considered as such. If there is, however, a chronic tachycardic condition, absolute rest might not be the best policy. But these patients, more than any others, should be warned against the slightest overexertion. When the patient is ambulant, and you have a pneumatic cabinet in your office, a daily seance of from five to eight minutes will be a considerable aid in your efforts to make a partially solidified lung do its normal work again, for there is no doubt about the therapeutic value of this useful instrument. It has rendered me excellent services with the patients who could come to my office. My time will not permit me to speak here at length of the virtue of the pneumatic cabinet as a diminisher of vascular compression, alveolar and tubular obstruction and a restorer of oxygenation. Those who are interested in the study of this subject I must refer to the excellent article of Quimby, "The Pneumatic Cabinet in the Treatment of Pulmonary Tuberculosis," which appeared in the International Medical Magazine for January, 1893.

Hydrotherapy.

The consumptive patients whom we are to treat at home will probably all have a bathroom where we can arrange to give a general douche as a tonic, a jet over the apices for the purpose of causing a revulsion, or a lateral douche in order to break up old pleuratic adhesions. Where there

is no bathroom, or where a visit to the douche room is either inconvenient or not safe, I resort to the following simple method: A wooden chair is placed in a large, circular, English bathtub, and the patient sits astride the chair, holding the back with his hands and bending his head slightly forward. Then two, four or more pitchers of cold or tempered water are rapidly poured over the shoulders. In cases where the reaction is feeble the patient is quickly put back into his warm bed, even if not thoroughly dry.

The best time to make the hydro-therapeutic application is in the morning, half an hour or so after a very light breakfast. Patients accustomed to heavy breakfasts should take such after their douche and morning walk, but should take a glass of milk with a slice of buttered toast before leaving their room. A morning walk should, if possible, always precede the douche. This is for the purpose of creating what French hydro-therapeutists call a pre-action.

Every douche or affusion should also be followed by a short walk or return to bed, according to the indication of the case. The cold douche should never last longer than twenty to twenty-five seconds, and one should always begin gradually, not give more than five seconds at first. The temperature may vary from 60 to 40 F.; only in exceptional cases would one need a more precise graduation of the temperature. The complicated procedure of the dripping sheet seems to entail too great a strain on the patient, and I do not favor it in phthisio-therapeutics. Wet-packs, on the contrary, over the thorax, seem to exert a soothing influence whenever there are pleuritic or intercostal pains, or that vague or undertermined feeling of discomfort in the chest. All hydro-therapeutic applications should be directed by the physician. He must have educated the skin and nervous system of his patient to the use of the douche by the gradual application of the water through friction and affusion. He must have taught his patient how to take an

occasional warm or steam bath to eliminate the toxines without taking cold afterwards.

Constant Medical Supervision.

The good results in sanatoria are to be ascribed to the constant medical supervision of the patient by the physician and his assistants who direct all the details of the hygienic, dietetic and symptomatic treatment. We must do the same if we want to institute a sanatorium at home. But there are a few points in the educational treatment of consumptives wherein the family physician has the advantage of the sanatorium physician. The former can make his authority felt whenever there is a question of marriage. I admit that the families will not always listen to such advice, still I claim that in many instances marriage between tuberculous individuals could be prevented by an energetic protest on the part of the family physician. Another important issue which will present itself more frequently to the family physician than to anyone else, is the question of prevention of conception when either one of the married partners suffers from pulmonary tuberculosis. I have no hesitation to declare publicly my position in this matter. To cut short a conception in a tuberculous mother is useless; she has a better chance of getting well if left alone, and if a thorough dietetic and hygienic treatment is immediately instituted and prolonged for at least a year after confinement. Of course, it goes without saying, that the tuberculous mother is not to nurse the child herself. Thus, through a very judicious management two lives have a chance to be spared, while through abortive proceedings mother and child would most likely have succumbed.

On the other hand, when it comes to the prevention of conception in a tuberculous woman, or from a tuberculous man, I believe it is the sacred duty of the family physician to teach these people legitimate means that they may not

bring into life a being tainted with a predisposition to this disease. Furthermore there is no doubt that the pregnant state in a tuberculous woman, while it may temporarily arrest the disease, causes in the majority of cases a more rapid decline after confinement. In view of our present knowledge of tuberculosis I do believe that to teach a tuberculous man or woman how to prevent conception, is not a sin either before God or man.

The symptomatic treatment of pulmonary tuberculosis must be the same everywhere, and I have nothing new to offer. But I desire to say one more word in regard to the prophylactic treatment which, I admit, I have also said on previous occasions, but which I like to repeat again and again.

The treatment of tuberculosis in the private home by the family physician should be prophylactic in the broadest sense of the word. It is the family physician who will see the incipient cases first, it is he who will discover a predisposition to phthisis when a wise and judcious treatment will save the patient. The intimate relation which exists between the family physician and all the members of the family give him here again the superiority over the sanatorium physician. The latter can only help the patient placed under his care, while the family physician can at the same time prevent the breaking out of tuberculosis among the other members of the family.

After all that has been said you will agree with me that the sanatorium treatment is feasible even in the average home, provided the patient's social and financial conditions permit the carrying out of a rigorous hygienic and dietetic regimen under the careful guidance of the family physician. But with the vast majority of tuberculous patients, and this majority constitutes the consumptive poor, a successful carrying out of the precepts of modern phthisio-therapy without special institutions supported by the state or munici-

pality, or private philanthropy, is utterly impossible. Thus you will pardon me if I conclude my paper with a fervent plea for a decided action on part of this society in the matter of the creation of public sanatoria, that is to say, institutions for that class of sufferers who deserve the greatest sympathy, and through whose hospitalization the public health will gain most and the commonwealth be morally and financially benefited.

It was in our great State, New York, through the efficient and energetic work of my esteemed teacher, Professor Bryant, then health commissioner, and who now graces our presidential chair, that the combat against bovine tuberculosis was first taken up. The work of the New York City Board of Health, concerning the prophylaxis of tuberculosis in man, inaugurated a few years ago, has won the universal admiration of sanitarians in this country and abroad. But of late we have not kept pace with even our sister States, much less with foreign countries. Pennsylvania and Illinois have a society for the prevention of tuberculosis, with growing funds for the erection of sanatoria. Massachusetts has its State Hospital for Consumptives. New York, the most densely populated and richest State in the Union, with the greatest number of consumptive poor, has neither a society for the prevention of tuberculosis, nor a sanatorium, nor a State hospital. May the New York State Medical Association in its last meeting in the nineteenth century not adjourn without taking some active step in this important matter.

DISCUSSION.

Dr. DeLancey Rochester, of Buffalo, said that he was deeply interested in this subject, and had presented it to this association at its last meeting. The care of tuberculous patients at home required great attention to detail, and to the individual case. He had found it impossible to get any patient to use a flask; they insisted upon using a handkerchief or expectorating in the street when out doors. The objection to the flask was that it attracted atten-

tion. It was seldom that the patient would use a proper pocket for the paper handkerchiefs, although doubtless a good deal could be accomplished by persistent effort. Not only should tuberculous patients not be kissed upon the mouth, but such a person should never kiss anybody. He had tried to have some patients wear the mask in the hospital, but had found that they were more often placed in the pocket. Such insubordination could not be punished by discharging the guilty ones, as they would then disseminate their disease. He had encountered this difficulty even in connection with the peppermint method of treatment. He would heartily endorse the condemnation of chest protectors and the advice to wear woolen garments next the skin. The taking of raw meat was of much importance, and he had never met with a patient who could not take it. While he agreed with the general rules laid down about the diet, he objected to the advice that they should take as much milk as possible. It was proper to urge the use of milk, but the rule should be to give half to one pint of milk three hours and a half after a meal; this was as soon as it was advisable to take milk after an ordinary meal. It was also important that the patient should take water freely. Of course, when giving milk in large quantity it should be remembered that 86 per cent. of water was given along with the milk, and due allowance for this must be made. He agreed with Dr. Knopf regarding the rules for exercise mentioned in his paper. In regard to hydrotherapy he had found that one could get along very well with the round tub and the chair, but it was less shock to the patient if a fountain syringe, with a large spray nozzle, were employed. This was more like the needle douche and caused less shock than affusion from a pitcher. He did not limit this application to the back. The warm bath seemed to him of as much importance as cold bathing; it should be taken at least twice a week. In cases in which there was a particularly inefficient action of the skin a warm air bath could be used. Where there was a good deal of sweating at night it was better to induce the sweating in the afternoon, as this would largely forestall the night-sweats and the induced sweating was not so prostrating. According to his experience the family physician could accomplish little in the way of preventing the marriage of tuberculous individuals. For cases of incipient tuberculosis occurring among the poor the State should certainly give aid. The more advanced cases could be sufficiently well cared for by the counties. The chronic cases cared for at the hospitals at home were the ones which spread the disease, for as soon as these persons became a little better in hospital they left, and then stayed in poor lodging houses and spread their disease. It was difficult to state just what was the wisest action to be taken to do away with this most dangerous element of

every community. It did not seem feasible to deprive these persons of their liberty.

Dr. Didama said that unfortunately a very large proportion of the patients needing sanatorium care could not go there. They were not the extremely poor, but the large number of people in moderate circumstances who could not leave home. It was for this reason that home treatment assumed such great importance. It would be a great thing if the paper just read could be placed in the hands of every physician in the State. The machinery advised was not very expensive. It was fortunate that a large proportion of the bacilli on the sidewalks were destroyed by the sunlight. A good many people could be prevailed upon to use paper handkerchiefs. He was not altogether in accord with the prevailing notion regarding the inheritance of a "tuberculous disposition." It was no more inherited than the predisposition to many other complaints. Only twenty-seven persons out of a hundred were related, even distantly, to consumptives, and the balance did not inherit what they did not have, and there was no reason for believing that the twenty-seven inherited the specific disease or a tendency to it. If the child of a tuberculous mother were taken away from her and cared for by a healthy nurse there should be no danger of the child getting consumption. If the child were kissed it was liable to develop tuberculosis of the bowel. Then again the tuberculous mother would not often allow the child to be cared for by another person.

Dr. W. E. Finder, of Rensselaer county, said that a great many cases of consumption were contracted by both patients and nurses in our general hospitals. Such cases had come under his observation. Paupers must be taken care of, and should be isolated, preferably on a farm. He believed very much could be done in the way of preventing tuberculosis if the people were educated to consider it a disease akin to leprosy, attacking the inside instead of the outside of the body. It was just as necessary to teach its ill effects in our schools as some claimed it was to teach concerning alcohol. The place to begin this education was with the children, so that the next generation might materially assist us in our work.

Dr. Wickes Washburn put in a plea for the incorporation of the farm colony with the system of State sanitoria. This would make the path easier for the poor consumptive, and would, moreover, allow the State to look after not only the incipient cases but those in the family who might be said to be in the "pre-tuberculous stage." There should be provision made outside of the cities for reception hospitals where the cases could be classified and distributed, as, for example, to the farm colony, to the hospitals or to places intended for advanced cases. If we adopted that plan we would not, as does Massachusetts, discharge patients from the State Hospital for

tuberculosis if it is found, after a few weeks, that they are not improving.

Dr. Bernard Cohen, of Buffalo, said that physicians themselves seemed to be thoroughly satisfied regarding the need for the establishment of a sanitoria. The easiest and most rational method of demonstrating the necessity of such a system was to show them the earning power of these individuals, and the cost to the State of caring for them. The interest of the country practitioner should be enlisted in carrying this matter before the legislature. Without such aid it would be difficult to accomplish much. It was an important humanitarian plan, but it also had an important financial aspect which could hardly fail to appeal to the public at large.

Dr. Knopf related an anecdote regarding a recent consultation. The attending physician had carefully instructed the mother not to kiss her child, yet the mother was seen to be alternately tasting the child's food and feeding it to the little one with the same spoon. The speaker asserted that the child of a tuberculous mother was more than any other human being exposed to contamination because of sleeping in the same bed and being in such constant and intimate contact with her. He would again say that chest protectors were an abomination, and distinctly predisposed to "catching cold." The tuberculous patient should take a good deal of milk, but it should be sipped, not drunk hurriedly. It was hard to get a tuberculous patient to wear a mask, and it would not do to simply tell him it was done for others; he should be told that it was for his own sake. He heartily agreed with the suggestion that the education on this subject should be begun with the school children.

REOPENING THE ABDOMEN FOR POST-OPERATIVE SEPTIC PERITONITIS; WITH REPORT OF CASES.

By C. C. Frederick, B. S., M. D., of Erie County.

When an abdominal section is finished we hope not to open that cavity again. It may necessarily be reopened for secondary hemorrhage, for lost sponges or instruments, for intestinal obstructions or for secondary infections. Any operator who would allow a patient to die from secondary hemorrhage without reopening to control it would be deemed guilty of serious neglect. So also would he be culpably negligent if he should allow a sponge or an instrument to remain in the abdomen, or if he did not reopen to relieve an intestinal obstruction.

The same responsibility exists in some post-operative septic conditions. The fact that intraperitoneal septic processes are usually fatal is no reason why an attempt should not be made to save the patient's life. Many patient's lives, who have perforative appendicitis, have been saved by prompt operation even when the process has been very active and virulent, and the hopes of success small. An abdomen full of purulent fluid and intestinal coils covered or glued together with lymph, when properly cleansed may not be a barrier to the patient's ultimate recovery in a fair proportion of cases. Some of the most unpromising of such cases in every surgeon's experience have made recoveries.

In this discussion I do not wish to be understood as referring to localized septic processes walled off by adhesions. I refer only to general septic peritonitis. These are always fatal cases if left to run a natural course. Reopening the abdomen will, therefore, not add to the probable fatality of the case, but as the result of experience it will in some

instances save life. If a patient is operated upon for pus in the pelvis and a peritonitis follows from infection at the time of operation, the prospects of any benefit accruing from reopening the abdomen are small. For, if the pus is virulent enough to infect the peritoneum at the time when most it is actively resistant, certainly washing and draining will not decrease the virulence of the infection or increase the resistance of the peritoneum. In later years, therefore, I have not reopened such cases unless there had also been an opening into some viscus.

When the septic process is not the result of infection at the time of operation, but secondary in nature, dependent upon the non-closure and leakage of a line of sutures in some viscus, then the chances for success in promptly reopening the abdomen are best. In fact, I might go so far as to say, that only in that class of cases is it indicated. If these openings into viscera have been caused by intrapelvic pus collections draining through them, we have primarily an infected area to bring together with suture, and there is no certainty of securing primary union. If there has been no primary infection of the peritoneum the patient will go along well till such time as the line of suture gives way, and the peritoneum is invaded by septic material. At such time the change is as prompt and as well marked as in perforating typhoid ulcers, or perforative appendicitis. Then is the time to operate promptly, and the results promise as well as for prompt operation in any perforative process. I wish to report briefly four cases which I have reopened. Two of them do not come under the class which I now only recognize as requiring secondary operation. They were both done in 1893, when the glass drainage tube was supposed to be a necessity in abdominal and pelvic surgery. They were undoubtedly cases of late infection from the drainage tube. Neither of them had any pus at the time of operation, and neither had an opening into any

viscus from which secondary infection of the peritoneum could have come.

Case I.—Mrs. S. ———, an invalid for years, with recurring attacks of pelvic peritonitis, had a large mass in both sides of the pelvis. On May 16, 1893, I removed both tubes and ovaries from dense adhesions. Both tubes were distended with fluid, but contained no pus. Glass drainage was used. Two days after operation the pulse began to rise, and patient's bowels refused to move. Vomiting began, the abdomen became distended and pus came through and around the drainage tube on the fourth day. The tube had not been removed because the drainage had been so profuse from the first. On the fifth day I reopened the abdomen, took out the drainage tube, freed all the adhesions, washed out the abdomen with normal salt solution and passed a large fenestrated rubber drainage tube through Douglas' pouch into the vagina from the lower angle of the abdominal wound. At periods of every six hours the abdomen was flushed through the tube with normal salt solution. The patient began to rally, and in nine days the temperature was again normal and the tube was removed. Recovery was uninterrupted.

Case II.—Encouraged by the happy outcome of this case I was again led to repeat the experiment on a Sister of Charity, for whom I did an abdominal hysterectomy for endometrial carcinoma in November, 1893. Why I did not recognize that infection in my first case was from the drainage I do not know, but I continued to use it. The discharge keeping up profusely, the tube was not removed till the sixth day, by which time pus was coming through and around the tube, and the patient had all the signs of a septic peritonitis. I followed the same plan as in my first case, except that I opened the line of suture in the vaginal vault, which had been closed, and passed the tube directly into the vagina. She died in two days, her symptoms being

in no way relieved by the drainage or flushings. I had no occasion to reopen the abdomen again for nearly five years, or until 1898, in which year I did two cases belonging to the class of secondary infection from separation of the line of suture in one of the viscera.

Case III.—Mrs. McK———, thirty-two years of age, had a large semi-solid tumor about the size of a seven months' pregnancy. She had been pronounced pregnant, which was true, but it was not intrauterine. She gave a history after operation, of suppressed menses and suspected pregnancy one year before, and a history of recurring attacks of pain and fainting, at each of which times the tumor increased in size, and remained permanently larger. This history was elicited after her recovery. Before operation she was too sick to give any history. On opening the abdomen, I found a subperitoneal semifluctuating mass of which the uterus formed a part of the anterior wall, and the posterior surface was covered by the descending colon and sigmoid, which had been raised up out of the pelvis. Coils of small intestine were adherent posteriorly. The peritoneum was incised in a clear area, and the mass enucleated with difficulty. It consisted of partially organized blood clots in concentric layers. The semi-fluctuation was due to a recent hemorrhage into the sac. Besides the clots and fluid blood a placenta and a dead six months foetus, in its membranes, were also removed. I then found that I had torn diagonally across the sigmoid. This had been done as the sac had torn while enucleating the mass, the sigmoid forming a part of the posterior wall of the gestation sac. The gut was joined end-to-end by a Murphy button. To drain the gestation sac, Douglas' pouch was opened freely and a drainage tube passed into the vagina. The edges of the sac were then trimmed and closed by continuous catgut suture. The abdomen was flushed and closed, leaving all the fluid it would contain. Everything went beautifully for three

days. On the morning of the third day she complained of abdominal pain, the pulse became rapid and thready, the expression pinched and green vomit began. I saw her six hours after this change. I thought that the button had given way and proposed to reopen her at once. The abdominal cavity was overflowing with fetid, purulent fluid, and coils of gut were covered with flakes of lmyph—a most unpromising condition. The button was found to be intact, but the edge of the sac had sloughed for about two inches, and the contents of the gestation sac had escaped into the peritoneum. After cleansing the cavities the edges of the sac were trimmed back into healthy tissue, and resutured. The abdomen was again flushed and a strand of gauze packed over the line of sutures and the end carried out at the lower end of the abdominal incision. She was stimulated and well nursed. The following day she was still pulseless and cold. I told her there was no hope of her recovery, and on my departure left a signed death certificate at the hospital. The same afternoon she began to show some pulse, her bowels moved freely through the button on the following day, and from that time her recovery was rapid and uninterrupted. She now is as well as ever in her life. The button came away on the ninth day.

Cace IV.—Mrs. C———, thirty-eight years of age, had a pyosalpingitis which had been discharging for a year through the bowel, and at times through the bladder. It is now discharging through both viscera. Her skin is sallow, she is emaciated, has no appetite, has an elevated temperature constantly—in fact, is generally septic. The left tube and ovary were enucleated from dense adhesions and the openings into the sigmoid and bladder closed. The abdomen was thoroughly flushed and closed without drainage, the belly being left as full of normal salt solution as possible. A self-retaining catheter was placed in the urethra. The patient did well till the fourth day; no signs of peri-

tonitis were present and the bowels had moved. The pulse began to change in frequency and character, and all the symptoms of rapid septic infection of the peritoneum came on. She was reopened in a few hours. The sutures in the gut were all right, but those in the bladder had sloughed. The edges were trimmed back into apparently healthy tissue, and reunited in layers, mucosa, muscle and peritoneum. The lymph was removed from all the intestines and the cavity generally thoroughly cleansed. Gauze was packed over the line of suture, and the end carried out at the lower angle of the incision. She improved at once, and began to take small quantities of nourishment. Her bowels moved daily with cathartics and enemas. All signs of peritonitis passed away, but her temperature and pulse still kept up, with profuse sweating. In four days urine began to come up through the wound, showing the failure of the second suture of the bladder to unite. The sinus and bladder were irrigated frequently, both from above and through the urethra. She died on the sixteenth day after operation, not from septic peritonitis but from general sepsis. Although she eventually died, we must recognize that the septic peritonitis was stopped in its fatal course. The autopsy amply proved this statement. The sinus running from the lower angle of the incision to the hole in the fundus of the bladder was entirely walled off from the general peritoneal cavity, which was clean, although showing a great many adhesions. Had she been in a less septic condition at the time of operation we may have every reason to believe that she would have recovered.

I, therefore, have to report three cases of general septic peritonitis as cured out of four operated upon, even if this last patient did die. I am not familiar with the practice of other operators in this class of cases. I have never seen any reports of such cases in the current medical literature. I, therefore, thought this report might bring out in discus-

sion something of benefit to us all. These are the only cases which I have reopened for septic peritonitis out of about one thousand abdominal sections. Fortunately they are rare.

DISCUSSION.

Dr. H. O. Marcy, of Boston, said that we had been taught that general infective peritonitis was necessarily fatal. As the last speaker had said, the abdominal cavity was difficult to drain. There had been many acrimonious debates on the drainage tube. Fortunately, it had practically disappeared from our modern surgery. In conditions of more or less general septic infection there was certainly a working chance to save life by operation, and we should avail ourselves of it. With reference to the use of peroxide of hydrogen he could not help thinking it oftentimes diffused instead of destroying infection—it disseminated the bacteria. For this reason he hesitated to use it; he did use bichloride of mercury, one to one thousand, with a great deal of freedom, but taking pains to follow with the application of saline solution. He had never seen harm result from using the bichloride in this manner, and he believed he had saved life by this thorough disinfection.

Dr. Frederick Holme Wiggin, of New York county claimed that if Dr. Frederick had closed the abdominal opening without drainage after flushing the abdominal cavity with saline solution and allowing some of it to remain the patient would have had a better chance for recovery. If, in addition to this, he had given saline enemata or introduced the saline solution into the system subcutaneously the woman would have had a still better chance of recovery. The efficiency of the saline solution so used undoubtedly is due to the fact that it excites the heart, the kidneys and the skin to greater functional activity, and so aids in the elimination of the poison.

Dr. Frederick, in closing, agreed that the day of the drainage tube had passed; he had not used one for a year or two. He had much more faith in securing complete haemostasis, in thorough cleansing of the peritoneal cavity with salt solution, leaving it as full as possible of the normal salt solution. If there were any evidence of a septic condition the veins should be filled either by the injection of saline solution into the bowel or into the cellular tissue of the breast. This would increase the elimination from the skin, kidneys and bowel, of ptomaines, and other poisons, taken up by the peritoneum. By filling the cavity with water one simply diluted the infection and spread it over a large surface. He believed both of the cases reported by him were examples of infection from the drainage tube. Nine hundred out of every thousand cases operated upon needed neither the Mikulicz drain nor the drainage tube.

MORPHINISM AMONG PHYSICIANS.

By T. D. Crothers, M. D., Hartford, Conn.

In 1890 I was appointed chairman of a committee to collect and study statistics of the prevalence of alcohol and opium inebriety. During this interval of nine years, a large number of statistical observations and data have been gathered, from which I present a preliminary report confined exclusively to the study of morphinism among physicians. I shall give conclusions rather than tables and general facts rather than exhaustive studies.

In a general history of 3,244 physicians residing in the eastern, middle, and some of the cities of the western states, 21 per cent. were found using spirits or opium to excess. Six per cent. of this number used morphia or opium prominently. Ten per cent outside this number were using opium or other drugs secretly. At least 20 per cent., including this number used spirits in so-called moderation. In another study of 170 physicians, seven per cent. used opium or morphia, and six per cent. were secret drug takers.* From the personal observation of a number of physicians who have a large acquaintance with medical men, from eight to ten per cent. are either secret or open drug and morphia habitues.

These figures appear to be approximately correct, and show that, at least from six to ten per cent. of all medical men are opium inebriates. This is undoubtedly a conservative statement considering the fact that, drug takers

* *Clevenyer*, in his work Medical Jurisprudence, says that 15 per cent. of all physicians use opium and its alcaloids to excess. A physician who was two years correcting and making lists of physicians for a directory, estimated that 20 per cent. of all physicians used morphia. In one instance, a teacher of materia medica who was a secret opium taker and was enthusiastic about the effects of morphia, had eight students who were morphinomaniacs. The presumption was that his teachings had a large influence in their addiction.

among physicians in particular, are secretive and conceal their use of drugs, especially where it implies weakness and reflects on their social standing. There are many reasons for the support of the statement of Dr. Elain, that a large percentage of physicians suffer and die from drug treatment of themselves. They begin to use spirits, opium, and other drugs for functional and transient disturbances, and later contract serious organic disease, the early drug taking having been a contributing cause. A physician, who in middle life is excessively neurotic and neurasthenic, or who is rheumatic, has organic heart disease or neuritis, or chronic gastritis, is often suffering from the results of excessive spirit or drug taking in early life. The early user of morphia, chloral, cocaine, and other drugs of this class, who after a time stops all use of them, suffers later from varied and complex neuroses. In the same way the spirit drinker finds in later life serious organic diseases springing up without any apparent cause. In reality they are traceable to the poisonous effect of drug taking early in life, although a period of abstinence may have intervened. Such cases are not uncommon, and occur in persons where this drug taking was concealed to a large extent. No doubt a great deal of invalidism, diseases and failures among medical men is due directly or indirectly to secret drug taking. Morphinism among physicians is usually associated with the use of this drug by the needle. Opium in the tincture and gum is also used, but less prominently. The effects are the same, only varying in intensity and rapidity. The opium users are often alcoholic inebriates switched from a parallel road. After a period of so-called moderate, or excessive use of beer, wine, or strong spirits, either secretly or openly, they turn to the tincture or powdered opium. From this time their career is one of marked progressive organic degeneration. The tendency is towards imbecility, and although they may be active for years, a low form of chronic invalid-

ism follows, and acute fatal inflammations are always impending.

The physician who uses opium is always somnolent, serene, and meditative in his manner. Except for an increasingly defective memory, degenerating ethical sense, and irregularities of conduct, with a certain lividity of face, there is little to indicate his condition. On the other hand, the morphinomaniac shows great extremes of emotion. At times he will be very talkative, and sensitive to his surroundings; then silent, indifferent, irritable or violent in his impulses and talk. He will also at times be very brilliant, make a clear diagnosis, perform a difficult operation, and even deliver a lecture with spirit and energy. The same impaired memory and ethical sense appears although more concealed. Morphinomania tends towards acute mania and suicide, with the same impending danger from acute inflammations.

A certain number of morphinists have been wine, beer and spirit drinkers, and while suffering from the effects of excesses, have found quick relief from morphia. Later they have in part or altogether given up spirit and used morphia. Periodical drinkers not infrequently find the same relief from morphia, and use it to break up the drink storm or lessen its effects. These begin at intervals to use morphia; and continue it steadily. Another class suffer from some neuralgic affection or spasmodic pain, for which morphia gives instant relief, and use it afterward as a specific remedy. A class quite numerous find in morphia a supposed stimulant when exhausted, but in reality a narcotic which covers up the protests of Nature. They continue its use until it is difficult to stop it. Insomnia, strains, and drains, and all the complex symptoms of exhaustion and poisoning, find most fascinating relief from morphia by the needle.

Morphinism is clearly built upon a foundation of neurasthenia, anaemia, hyperaemia, and from hereditary nerve defects. Also from drug taking and intoxicants, nutrient derangements and the complex injuries to the nerve centers. To this are added the various disturbances which come from irregularities of life and living, and the nerve shocks of failures, successes and emotional strains. Following these states, are both physical and psychical pains, brain and nerve perturbations, muscular and organic weariness, with depressions. For these the needle is a panacea.

There is a pleasing fascination in the rapid, complete change and transition which follows the use of the needle. To the psychopath, by inheritance or acquirment, this is a revelation, and no other form of administering morphia can be compared with it. This actually develops a needle mania, and nearly all morphinists are hypodermatic drug maniacs. The withdrawal of the morphia is unnoticed as long as the needle is used. In a certain case, a physician under the direction of his partner, used the needle with water, supposing it to be morphia, for two years after the withdrawal of the drug. It is the common experience to continue the use of the needle for its mental effect long after the morphia is abandoned. Even then it is difficult to break up the mania for this form of drug using. It has been stated with some basis of fact that the constant administration of drugs by the needle, and particularly of morphia, is a prominent symptom of a morphinomaniac physician. The observation is often made that some of the most enthusiastic defenders of the use of morphia by the needle, are confirmed users of the drug. Two therapeutists and authors who praised this form of medication, died from the excessive use of the drug. Thus, the needle delusionist is often his own doctor and patient. This is true in other drugs, where the physician's personal experience is reflected in his enthusiastic use of the same drug upon his patients.

The medical morphinist may succeed in concealing his use of morphia for a variable time, but its effects on his thoughts and conduct can not long be covered. He will early begin to show carelessness in conduct, neglect of duty, loss of personal respect, and emotional changes. Along with this appears a childish egotism, and a dispositon to criticise and to expose the weaknesses of others.

A recent example of this was the sudden slanderous disposition manifested by a quiet physician, who was previously reticent as to the faults of others. For two years he created a good deal of bad feeling by his foolish criticisms and falsehoods. He was arrested for slander and his morphinism was discovered. The egotism had become a veritable delusion that in this way his condition was concealed. In some cases intense aversion exists to acknowledging the fact of using morphia, and keen pleasure in concealing and denying its use. This low regard for the truth is an ethical defect common to nearly all cases of morphinism. It is usually childish and apparent, but often extremely subtil and cunning. In most cases it applies to all the relations of life; in others it is partial, and confined to the morphine addiction. It shows the damage to the sensory and reasoning centers as well as the effect upon the higher psychical brain.

The organic defect also grows, and in his own opinion the danger of his condition is minimized while his ability to stop and treat himself increases. Credulity alternated with distrust follow each other, and at one time a good physician will accept and use secret drugs, and do many unreasoning things. Later, he will doubt everything and be suspicious of every condition of his surroundings, and his relations to them. This erratic conduct will be seen in his endorsement of new and strange theories. His political and religious views will change, he will distrust and deceive his nearest friends. He will make strange acquaint-

ances; write eccentric papers for the journals or read them in the local society.

A study of papers in medical journals will show the writing of concealed morphinomaniacs and cocaine takers. The one will be startling, inconsistent, and assertive; the other will be a continuous, monotonous flow of words, pointing in every direction, and never ending. A voluminous medical writer under my care for morphinism has never written a line since recovery. Before he wrote from one to two papers a week, and read them at all the societies in his neighborhood. Often morphine or opium is the subject of their writings, and while they may read voluminously on this subject, they write erratically. The proportions of the theme are distorted. Insignificant parts are exaggerated, and central truths minimized. Morphinists are also prominent as writers on several topics in medicine, and report extraordinary gynaecological cases, and many startling conclusions.

In their personal intercourse, they are boastful, have marvelous experiences, and lead all others in business and mental activity. With these mental changes there is increasing abruptness and coarseness of manner and language, and neglect of personal appearance. The untruthfulness merges into deceit and dishonesty, and often senseless stealing. There is increasing suspicion and distrust. Physically, there is general anaemia, with digestive disturbances; and neuralgias, both general and local, are prominent. After a time the medical morphinist will accede to the pressure of friends and try to stop its use. He may succeed, but soon relapses. Then he will try again with the same results. Or he will turn to spirits or other drugs, and after a time give them up, only to return to morphia. All sorts of plans and specifics are tried; but all fail. The gradual reduction extending over months ends in disgust and a return to large doses. All this experience increases

his egotism and confidence in his ability to escape by his own powers, if he can only have his own way, and control the conditions.

Finally, after trying various means and measures, he consents to go to an institution for legitimate treatment. He is either skeptical, suspicious, and secretes morphia in his clothes for emergencies, or he is credulous, and has exaggerated notions that the morphia can be taken away without the slightest discomfort or even without his knowledge. Such have a fixed conviction of mental strength equal or superior to others regarding the use of morphia, particularly from experience enabling them to decide on the means and measures for successful treatment. Like many alcoholists they assume superior knowledge of their own case and of how they should be treated, and constantly review their symptoms, and reason out the means for successful treatment. As the symptoms change, the diagnosis and treatment should change; the result is, they soon become disappointed or dissatisfied, and secrete morphia for possible future emergencies, or leave condemning the asylum and its management for their failures. In this way the deceptive egotism and secretiveness, with delusional reasoning, make the medical morphinist a most difficult patient to treat.

The removal of the morphia, and the restoration of the functional derangements are practically simple with the full control of the patient and his surroundings. The treatment and after care require far more skill and tax our therapeutic resources. The abandonment of the needle at the start, and the change to some other form of opium, or other narcotic to lesson the acuteness of the withdrawal symptoms, then the slow or rapid withdrawal of the drug, are the most practical means. The hot air bath with massage daily or more frequently, if necessary, is valuable. Strychnia, acids, and some of the bitter tonics are equally

useful. The bromides of sodium, cannabis, indica, hyoscyamin, and the milder sedatives, such as valerian, lupulin, may all be used to relieve the acuteness of the withdrawal symptoms.

The mental effect of remedies and efforts made is often more effective than in any other disturbance, and constitutes a very important means of treatment. The power of suggestion, and faith in certain drugs will overcome the most distressing symptoms. Using an unknown drug has often broken up the insomnia and the reflex disturbances. One of the specific opium drugs which has brought great wealth to the proprietor, contains only lupulin and acid, but is given with great minuteness of direction, and sustained by a large book of most extravagant certificates of former cures. A boisterous, emphatic clergyman, impressed a morphinist doctor that he would be lost if he did not give up morphia at once. He went to bed, and from the dominance of this idea, overcame all the common withdrawal symptoms, and made a good recovery. A physician under my care on the eve of marriage gave up at once the use of ten grains of morphia daily, and had none of the common after symptoms from the same mind effect. The hypersensitiveness, mental and physical, requires mental treatment as well as exact surroundings and exact care.

The medical morphinist is dangerous to himself and others, and should place himself under others at once. It is folly to attempt treatment at home and under his own care. He may succeed in withdrawing the drug; but relapse will be certain, and the failure will leave him worse than before. He should go under the care of one in whom he has confidence, where special surroundings and means may be had and where the work of recovery can be made conclusive. He must give up all ideas of selftreatment, and trust to others without question or doubt. The morphia can be removed in a few days, and then the real

treatment will begin; and this can be carried on along lines familiar to the patient, and with his full co-operation. The morphinist will discover the damage to his system only when the drug is removed, and with a good adviser and the use of means may do much to permanently repair it, and be a healthy man in the future. As in other cases, permanent restoration depends upon an early recognition of the trouble, and the prompt use of exact means in the control of the best men, under the best surroundings, carried on for a time sufficient to ensure permanent results. Especially must the causes for the using of the morphia be removed.

I cannot close without calling attention to the fact that morphinism is increasing among physicians. The reports from private asylums and public hospitals show that within five years medical men form a considerable proportion of their inmates. Specialists on nervous diseases sustain the same fact. The young and the middleaged men are the most common victims. Often they are from that class of delusional therapeutists who want to prove everything by personal experience, or who have exalted conceptions of the power of drugs, and believe that researches in that direction will open the road to a physical millennium. Perhaps morphinism among physicians is rather a sign of the stress and nervous strain in the world incident to civilization, or common to the overcrowding and overwork demanded of the successful man. At all events it is one of the most fascinating and serious modern diseases which can come to the professional man. Teachers of therapeutics by their graphic descriptions have roused a morbid curiosity which has been fatal to the student in after life. I have collected a number of instances of this kind, showing that this method of making morphinists is not only possible but a dangerous reality.

I conclude with a caution which cannot be stated in words too strong—Never use morphia by the needle on your-

self, and never have it used except by the counsel of a trusted medical adviser. Never give morphia to a neurotic or psychopathic physician until you are satisfied that it is the best remedy which can be used. If you are using morphia, abandon it at once, or make every effort to do so at the earliest moment.

DISCUSSION.

Dr. Leroy J. Brooks, of Chenango county, said that he had been so situated as to know something of the prevalence of this habit in his own county. He had personally known of twelve cases of morphine, cocain and whiskey habits. Of the morphine, cocain and whiskey habits combined, there had been four; of morphine and cocain four; of morphine and whiskey, four. Three of the twelve were dead. Only three were over fifty years of age, the average age being between thirty and forty-five. Three of these were specialists, and two of them had practically abandoned practice. One was a man who had experimented upon himself with a so-called "cure." He finally took twenty grains of morphine a day, and then gradually decreased it, supposing that a cure would be effected, but instead he added whiskey drinking to the habit. The physician practicing in a sparsely settled and rugged country easily became fatigued and so fell a ready prey to such habits. Of the four cases in which the habit had been confined to morphine, cocain and whiskey he could not say positively regarding the beginning, though he had the impression that in three the whiskey habit had been the starting point. Several had made desperate attempts to rid themselves of the habits. One had made repeated and vigorous attempts at intervals of a few months, but had only been able to secure temporary improvement, and then, on resuming business, the fatigue incident to his work brought again the habit. One had contracted the habit from spraying his nose with cocain.

DIGEST OF A PAPER ON ALBUMINURIA; ITS PROGNOSTIC VALUE IN CHRONIC NEPHRITIS.

By Charles Alling Tuttle, Ph.B., M. D., New Haven, Conn.

The mass of evidence which has come to us of late from the autopsy table shows conclusively that Chronic Nephritis exists and is an unrecognized cause of death in a proportion of cases far beyond ordinary belief and the comparison of carefully kept records of cases before death with the autopsy findings further shows that little reliance can be placed upon the mere urinary findings, either positive or negative, as a means of absolute diagnosis or prognosis of Bright's disease. It will be the purpose of these notes to show that the result of the ordinary examinations of the urine either in our office or laboratories are of little if any value in very many cases from a diagnostic or prognostic standpoint, and that we are forced upon the very varied and numerous chemical manifestations and the absolute toxicity of the urine as offering the best and safest means of diagnosis.

That chronic interstitial nephritis can exist without albumin, without casts and without uraemic symptoms is beyond question; that such conditions do exist and are brought out only as the autopsy is not an unusual circumstance and further, that albumin of measurable quantity, casts either of a hyaline or granular variety or both can exist and the health of the individual be unimpaired throughout many years is the experience of the writer. "Formerly a single observation of albumin in the urine meant albuminuria; albuminuria meant disease of the kidney; disease of the kidney meant in a great majority of the cases chronic Bright's disease; Bright's disease meant

steady progress towards a more or less remote fatality; interrupted at times by various accidents which would still more accelerate it." In this both the premises and the logic are in error and are in general as untrue as would be the opposite statement that chronic Bright's is never attended with albuminuria or that albuminuria never meant nephritis. My experience leads me to believe:

First. That Bright's disease may exist without the ordinary urinary manifestations—viz.—albumin or casts.

Second. That positive urinary indications—viz.—albumin and casts, may be found in the normal urine and hence do not necessarily mean Bright's disease, and

Third. That, given a case of chronic Bright's disease attended with albuminuria, the fact of its presence, its constancy or its amount has absolutely no prognostic significance.

First. Bright's disease without urinary manifestations—There can be no question to-day but that Bright's disease may begin, run a more or less lengthy course and terminate fatally without at any period showing other urinary symptoms than continued low specific gravity or frequent micturition, and cases also occur which at one period of their course have both albumin and casts, but in which these disappear and the patients have comfortable health throughout an indefinite number of years. Let me quote: [2]Austin Flint, as early as 1886, says, "the small granular kidney may sometimes secrete urine which in no way differs from normal," and quotes Bartel as mentioning a case in which albumin was absent throughout the whole course of the disease. He says further "that casts may be likewise absent." [3]Saundby in 1889 says, "We should absolutely give up the idea still current in practice that albuminuria must always coexist with nephritis," and [4]Cheberly, speaking of the symptom albuminuria, says, "Often the only symptom of Bright's disease, it may be entirely wanting in a pro-

nounced case and its intensity varies without direct reference to the degree of renal alteration." [5]Coquet, in a thesis on the same subject, divides the cases into three classes (*a*) Those in which the symptom (albuminuria) is absent but a portion of the time. (*b*) Those in which it is absent until just before death and (*c*) Those from which it is absent all the time. [6]Andus, speaking of interstitial nephritis, says, "The existence of this condition may be unknown, as frequently happens, when the post-mortem examination shows the characteristic kidney in one who during life has no symptoms indicating renal disease." [7]Stewart writes "There is a non-albuminuric nephritis exclusive of cases of typical fibroid kidney. In this form of nephritis albuminuria may be completely absent while signs of renal insufficiency and even uremia may appear." [8]Fienga, [9]Denby, [10]Brandyth Symonds bear witness to the same thing, and [11]E. R. Edwards also writes: "I am certain we overlook both acute and chronic nephritis in regarding albuminuria as a certain or constant symptom; nephritis without albuminuria certainly exists." [12]Qurirolo, [13]Lacorché, [14]Talamon and Larcereaux each report many cases and agree with [15]D. D. Stewart, who says he believes that albumin may be constantly absent and casts be detected only after much search, if at all, and states frankly the conviction which he feels regarding his own experiences that he has overlooked many cases of nephritis without albumin. In summing up his article, [11]Edwards makes this pertinent remark: "Hence as we fear, instinctively as it were, the existence of nephritis before we examine the urine, so we may still fear its existence after negative urinalysis," and he also remarks: "Casts should be searched, for they are more constantly found than albumin, but I believe they are not invariable in nephritis."

This is also the experience of the writer. In my last twenty cases, all in private practice, where the diagnosis of

Nephritis was made, two only are of interest in this connection—one A. G. (case 12), in which there was neither albumin or casts at any time, the diagnosis being made upon the oedma and uremia, and the other A. T. (case 10), in which albumin was found in one-third of all examinations, 75 in number, and extending over approximately three months. In two only of the twenty cases could autopsies be secured—one the case A. G., who had presented only negative urinalysis and yet the pathologic condition of the kidney unquestionable.

Second. That positive urinary indications, viz.—albumin and casts, may be found in the normal urine and hence do not necessarily mean Bright's disease. By means of the recent and more exact methods of urinalysis it is made possible to show a much smaller amount of all the elements of the urine than formerly. This is particularly true of albumin and casts until to-day quantities of the former amounting to only one in three hundred thousand can be detected and approximately measured and casts found with comparative ease, where formerly none were believed to exist. I shall attempt to show, largely by reference, that not only albumin but casts occur in the normal urine—that is, if we accept as normal the urine passed by individuals in whom it is impossible to detect anything but perfect health and strength and harmony of physiology at the time and whose physical condition remains throughout many years unimpaired. It is not my purpose at this time to go far into the so-called "functional" or physiological albuminuria. That albumin both constant and intermittent may occur in an individual and not be renal in its origin, or if supposedly renal to be consistent with perfect health and longevity, will in this day hardly be questioned. The writer has at present no less than seven cases under observation of healthful individuals in which albumin has existed from two to nine years, notably one of a gentleman

about sixty, in whose urine twenty years ago was detected a considerable quantity of albumin, which still exists. This man is hale and hearty and has but a slight arterio-schrosis. [16]Saunby as early as 1889 answers the question "Does albuminuria occur in healthy persons?" in the affirmative and bases his reply upon the examination of 461 cases of supposedly healthy individuals and found albumin in 118. [18]Senator, of Berlin, holds on this point that urine is a product of transudation and normally contains a certain amount of albumin like all transudation fluids, that the normal amount of albumin in the urine may be increased without fault in the kidneys to the production of so-called "physiological albuminuria" and the writer agrees with Richardson (London) who says: "It seems now to be accepted that there is a form of albuminuria in which there is no real disease whatever, nor actual organic disease of any organ of the body but a physiological state during which albumin passes by the urine as if the act were natural and dependent upon some simple physiological change." The significance of the presence of casts has undergone similar changes to that of albumin in estimated importance and for similar reasons until recent writers ([22]Haines and Skinner) claim that by their methods of careful search casts may be found in samples of urine even from persons in perfect health. If then we accept this as true and allow also the statement and late statistics of Shattack and Mitchell showing that they have found casts for years in healthful individuals, we must be impressed with the idea that little significance can be attached to them. In concluding this section let me refer you to one writer, Edwards (q. v.), who says: "Our conception has been broadened concerning the significance of casts, especially hyalin, now regarded as occurring in urine otherwise normal," and to [23]Symonds, who speaks of casts of "functional origin," or as I would prefer to call them, *Physiological casts.*

Third.—Given, as case of chronic Bright's disease attended with albuminuria that the fact of its presence or its constancy or its amount has absolutely no prognostic significance. For some time it has been the personal opinion of the writer, based upon the observations of something over one hundred cases, that the amount of destruction in the renal parenchyma is in chronic nephritis, a measure of the prognosis, but that the amount of albumin in the urine is in no sense indicative of such destruction, and further that we have to-day nothing, unless it be the absolute toxicity of the urine or the degree and character of the albuminuric retinitis, that at all serves as a measure of this destruction. Albumin may simply indicate a lesion of the glomerular filtering membrane—nothing else—and to form an idea of its profundity, extent or gravity, other sources of information are to be searched. Lécanché and Talamon (l. c.), in speaking upon this point, say "It is impossible to attach any prognostic value direct or remote to this condition, as the percentage of albumin in the urine is not proportionate to the degree of renal lesion." In a recent address before the Academy of Medicine, Paris, [25]Semola expresses himself as follows: "There can be no exact relation of cause or effect between the severity of the renal lesion and the degree of albumin excreted, and one can influence the latter only by the state of the blood albumins without any reference to the condition of the kidneys." [26]Mesnard writes, "The intensity and character of this condition (albuminuria) are without value to indicate the degree of pathological changes in the kidneys or the imminence of the grave occurrences common in Bright's disease." That a fatal issue in Bright's disease may be forestalled in some cases and the prognosis as to time materially modified in almost all cases is beyond question, for cases are not uncommon where the individual life has been prolonged fifteen, twenty,

or even thirty years under the influence of judicious medication and dieting.

It would seem from what has been written that Bright's disease might be difficult of diagnosis, and I believe that it is more often overlooked than any other common disease. Insidious in its approach, indefinite in its manifestation and far reaching in its effect, it often baffles the most acute of diagnosticians until one realizes the full force of what was written by Edor, who says: " If in such a case as is reported by Edwards, nephritis is *suspected* when there are no suggestive cardio-vascular findings, no albumin, no casts, no decrease in total solids, specific gravity or quantity, no oedema mentioned, and the possible diagnosis is confirmed by autopsy, we can only congratulate the physicians on their acuteness and feel that when a diseased organ presents absolutely no symptom of abnormality in its products and no evidence—except so very indefinite one as nausea of impaired functions, nobody but a clairvoyant can be blamed for overlooking it.

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CURABILITY OF EPILEPSY, AND HOW IT MAY BE ACCOMPLISHED.

By William P. Spratling, M. D., Medical Superintendent of the Craig Colony for Epileptics.

The close observer, who has had the opportunity to study repeatedly and in detail many epileptic seizures, will not, I think, fail to agree with me when I say that the usual definition of epilepsy found in most text-books, to the effect that it is "a disease characterized by tonic and clonic spasms and followed by loss of consciousness," does not describe the condition with scientific accuracy in a large percent of cases.

Many cases we know have tonic convulsions only; others, clonic convulsions; while a yet larger per cent. do not suffer a complete loss of consciousness. In the varying types of the latter class, consciousness may be disturbed slightly, or profoundly, or be completely lost.

From the symptomatology of the disease we must reason back and study the particular area of the brain involved at the time of the seizure. Many cases exhibit convulsive phenomena that appear to be almost altogether limited to some part of the motor area in the brain, governing as may be some one member of the body. Other forms of epilepsy show themselves by psychic disturbances in the individual that may or may not be combined with some fine muscular movements, such as fibrillary twitchings about the mouth, the fingers, etc. The third class show evidences that both the motor and sensory areas in the brain are involved, may be simultaneously, or may be in regular order or progression. For instance, a convulsion may begin in the right thumb and extend in the following order: The right hand,

the forearm, the upper arm, the side of the face, the chest, the lower right leg, and here it may stop short of covering any greater field in the brain, or it may spread with the rapidity of nervous action and involve the entire brain.

At the outset we would divide epilepsy in its initial stages into true and false; the first to include such cases as may be traced to a true physical cause, recent in origin; the second to include such cases for which we must assume that there is an organic defect or deficiency in the brain—congenital or acquired. The peculiarities of the treatment of the false epilepsies that come under the first group shape themselves under the sound therapeutic principle in medicine and surgery, that in the treatment of any disease the first object is to remove the cause. If a direct relationship can be established between strained eye muscles, or between the pressure of a bone on the brain, or the presence of poisonous gases in the alimentary canal, then the only rational thing to do would be to remove the cause, if possible; bearing in mind always, if you please, that we have at first to do with reflex epileptic phenomena only, and not the true disease. Time in such cases is invaluable, for healthy, nervous tissue is quick to learn, and habit epilepsy is easily acquired.

I wish it were in my power to impress upon those present the great importance of the early treatment of such cases. We have learned that many cases of nocturnal epilepsy go unrecognized and untreated until the disease is well established, and I have known of well defined diurnal cases that were regarded at first as simply "fainting spells" or "spasms," and indifferently treated until the hope of cure was largely passed.

As Dr. Abram Jacobi said to me some years ago when I applied to him for his views about the convulsions of dentition as a cause of epilepsy, "Let us remember that every convulsion, ever so slight, may produce cerebral hemorrhage

with all its disastrous consequences—epilepsy, idiocy, imbecility and insanity."

Five years later it was my pleasure to have pointed out to me in the Pathological Institute in Berlin, by Dr. Virchow, minute spots of softening in five brains which had come from very minute hemorrhages. Two weeks after that I asked Dr. Hughlings Jackson what he believed would be found ultimately to be the cause of what we now call Idiopathic Epilepsy. He promptly replied, "In many cases, minute hemorrhages in the brain."

A few years ago I saw a girl, eight years of age, who developed epileptiform convulsions, due to gastro-intestinal inflammatory changes. A skilled physician in this city gave a very favorable prognosis, but, unfortunately, the child suffered shortly after a large number of very severe seizures that produced what we now term, in some cases when the results are not so severe, "exhaustion paralysis," but which in this case went further and actually destroyed, to a large extent, the integrity of the area in the brain that nourished and controlled the left shoulder, arm and hand. The child now promises to be a confirmed epileptic, mentally dull and may be later on an object of epileptic dementia, with partial left epileptic hemiplegia. It is most essential, therefore, to early distinguish between true and false epilepsy—to locate in the first place, if possible, the site of the disturbance and as quickly as possible remove it.

When we come to what we regard as true epilepsy, we have quite another matter to deal with. Sir William R. Gower states that 75 per cent. of all cases of epilepsy develop under the age of 20 years. Out of 485 cases admitted to the Craig Colony, 85 per cent. of them developed the disease under the age of 20 years. This shows at once that the influences of heredity have a powerful action in bringing the disease to light.

Out of 145 tabulated cases, 20 of them developed epilepsy

under the age of six months, while 68 of the 145 developed it between the ages of 10 to 16 years, the period covered by puberty. Cases of epilepsy arising de novo after the ages of 25 to 30 years may nearly always be set down as sporadic, due to recent causes. The type of the convulsions in such cases being at first epileptiform, while the prognosis in them is better, if they are not organic, than when the disease comes on earlier in life.

We have now some foundation upon which to determine lines of treatment best adapted to cases arising from different causes, and I will, before speaking further of the treatment, briefly review the main points in the foregoing. First, we must distinguish between true and false epilepsy; that is, whether the convulsive phenomena are due to some ascertainable irritant, that if sufficiently early removed may cause cessation of the convulsions, or whether there is primarily an organic defect or deficiency in the brain, endowed with the full power of action, that is causing the convulsions, or whether the individual possesses the essential predisposition only, and is ready to manifest convulsions under the proper stimulation.

The treatment of the first class of cases is much easier and more often results in cure than the latter. The convulsions of early life come under this head, such as are usually due to dentition, combined or not with a rachitic constitution; indigestion, with its poisonous products in the alimentary canal, acting on a pre-sensitive nervous system; or injuries to the head, so common in early childhood. The plan and scope of the treatment of such cases is apparent enough from the cause; but I desire to speak strongly in favor of looking closely into the ancestry of the child before treatment is begun or a prognosis given, for you may find that what appeared to be the real and only cause of the convulsions was merely the exciting cause, and that heredity had already prepared an easy way for the disease.

Furthermore, I would especially urge against the giving of such drugs to young children whose chief therapeutic action it is to suppress the convulsive phenomena only. We ought not to be satisfied with this, for in administering such drugs we not only stand in danger of masking what may be valuable objective indications of the disease, but we know from experience that we will certainly largely destroy the digestive and assimilative functions of the child—something we should guard against above all else. Were I to tell you the number of cases I have seen that have gone for years on a routine suppressive treatment—the bromide of potassium being the favorite drug for this purpose—and how it destroyed the digestive and assimilative functions of the patient, I might tempt your credulity further than it might be wise.

If a stream of water was flowing from the end of an iron pipe and we attempted to stop its flow with a plug of earth, it might succeed for a short time, the length of time depending greatly on the water pressure; but finally the water would break forth again in greater volume and do more damage than ever. The true way to have stopped its flow would have been to cut off its fountain source. The same principle applies, in my opinion, in the use of the bromide of potassium in epilepsy. I am frank to say that I have yet failed to see a case in which the use of this drug cured the disease. I have seen many cases in which the fits were suppressed for months at a time, but the administration of the drug had to be continuous and in large doses to do this; immediately the drug was withdrawn the convulsions returned.

Church, in Nervous and Mental Diseases by Church and Peterson, page 576, edition 1899, says: "Cures by the bromide treatment are not to be expected. It is at best a palliative treatment, and one fraught with great disadvantage." We, at the Craig Colony, reached this conclusion

three years ago, and personally I have not prescribed the drug for any case of epilepsy since that time.

The treatment of the second class is more difficult than the first, and they may be considered under the following subdivisions:

First. Cases due to cerebral hemorrhage in early life and followed by contractures and deformities.

Second. Cases due to trauma affecting the brain.

Third. Cases due to specific infection of the brain.

Fourth. Cases due to brain tumors.

Fifth. Cases due to cerebral hemorrhage occurring late in life, in which the convulsions that often follow may be mistaken for true epilepsy.

The treatment of the first class can hardly be undertaken with hope of complete cure; but an experience of several years, covering the treatment of approximately fifty of such cases at the Craig Colony, suffices to show that under long-continued physical, surgical, dietetic and medical treatment a large per cent. of such cases can be greatly benefited.

Let the child live as much as possible out of doors and make use of as many physical movements as may be at its command. Endeavor to regenerate the impaired area in the brain by the systematic use of the proper parts of the body. Well directed gymnastic exercises will help to do this. For the correction of deformities, even though such correction make for no greater gain than freer action on the part of the child, the orthoepedic surgeon should be consulted. We must not overlook the importance of diet in all cases of epilepsy, but it is not so important a factor in this class of cases, where the epilepsy is due to organic lesion, as in others not dependent upon such a cause.

In the treatment of cases due to trauma of recent standing, the same principle applies that we have before spoken of; that is, as quickly as possible remove the cause; but these cases, in our opinion, do not come under the head

of true epilepsy, but belong at first to the group of so-called reflex epileptic phenomena. If a child receives an injury to the head and a piece of bone presses upon the skull and convulsions follow, the only thing to do is to remove the piece of bone as quickly as possible, and good surgery would do this even before convulsions do follow.

I feel it worth while to again repeat what has before been said about habit epilepsy. The convulsive habit once established, is hard to break; therefore, the importance of removing the cause as quickly as possible.

In the treatment of cases due to trauma of long standing, in which deep-seated changes have occurred in the brain, and which changes are beyond the power of the surgeon's knife to remove, I think that great care and judgment should be exercised before operative procedures are decided upon.

In "Nervous Diseases by American Authors," edited by Dercum, 1895, page 304, we find the tabulated results in 44 cases of epilepsy that have been operated upon. In ten, the results stated by the reporter were left blank.

Under "Remarks" by the tabulator it is stated, "Time of observation after operation not sufficient," and it is noted that this period varied from one month to three years, the latter period being in one case only.

The operators reported ten cases cured; and it is interesting to note the length of time that had elapsed between the operations, and the date on which the case was regarded as cured:

One, 3 months; one, 1 month; one, 10 months; two, 4 months; one, 43 days; one, 5 months; one, 3 years; two, no time given. Two others were marked by the operator, thus: "Recovery; Recurrence of Fits." The one recovery that lasted three years, barring two fits just after the operation, was in a case where the kick of a mule had been received in the left frontal region, twelve years prior to the opera-

tion. In the meantime, the fits had been irregular in occurrence.

As a fair and just criticism, no one can object to the statement that but one case, only, of the 44 showed improvement or recovery that could be positively stated as being likely to be of lasting benefit.

In the issue of the Philadelphia Medical Journal for January, 1899, I reported seven cases of trephining in epilepsy, all of them having been admitted to the Craig Colony after the operation, and all without any permanent beneficial results. Since that time two additional cases, making nine altogether, of trephining in epilepsy have been received at the Colony; nor did any good results follow the operation in the two additional cases. It would be wrong to argue that because these few cases were not benefited or cured by operation on the brain, trephining for epilepsy is never justifiable; but I reported the above seven cases to illustrate a principle that I now reiterate, and that is, that I believe it is wrong to apply the knife to an epileptic's brain years after an injury is received and years after the disorganizing effects of the convulsions have permeated the entire brain, causing a widespread and disastrous lesion that the knife cannot reach. I believe the principle of "Non Nocere" should be made to apply in a large per cent. of such cases.

Occasion was taken in the same paper to call attention to the desirability of being sure that trauma was the real cause of the convulsions before the operation was decided upon, and especially would we like to exclude hereditary influences before operating. By careful inquiry, we found that many of the cases above referred to had exceedingly bad ancestral histories, and in some of them we firmly believed that the epilepsy was not due directly to trauma and that it acted as an exciting cause only. In some of them, in fact, degenerative changes in the brain had taken place to the

extent that the mental condition of the patient was permanently unsound before the operation.

I do not wish to be understood as arguing absolutely against surgical interference in epilepsy; but the only point I desire to make is that we should carefully ascertain the true cause of the convulsions before such an operation is performed.

The British Medical Journal for September 16, 1899, in giving the transactions of the last meeting of the British Medical Association, accredits Dr. Fletcher Beach with having said, " I have seen a few cases of Jacksonian epilepsy; in one case craniectomy was performed and some thin pieces of bone which were apparently pressing on the dura mater were removed. For a time the fits ceased, but they recommenced and the child became strange in her manner and was so irritable and spiteful to the children in the ward that she had to be discharged.

Cases due to specific deposits in the brain, such as gumma, are more amenable to treatment, and cures in these cases may often be effected, provided they are taken in time. The treatment for this class is the same as that for general syphilitic infection. Some cases of epilepsy have been reported as being due to tumors of the brain.

In the spring issue of " Brain " for 1899, several cases of this kind are reported by Bramwell. It is questionable whether a simple small non-malignant tumor can cause true epilepsy. If the tumor is malignant and destroys brain substance, or so large in mass as to seriously destroy or interfere with the functions of the brain, convulsions may be produced that later on may run into true epilepsy. The treatment of such cases can only be undertaken in conjunction with the surgeon.

Cases of pseudo-epilepsy, or epileptiform convulsions, that frequently follow cerebral hemorrhage in persons of middle life, must be treated just as ordinary cases of apoplexy.

One such case that I now recall in a man 58 years of age, and whose epilepsy was said to have developed eighteen months prior to his admission to the Colony, was recently discharged as recovered; that is, the result of the hemorrhage in the brain that gave rise to epileptiform convulsions was removed.

And now we come to that great class whose disease is regarded as idiopathic. That there must be a cause for the convulsion is true, but our skill is not yet sufficient to discover it.

For practical study, we will divide these cases as follows:

First. Those presenting subjective physical aura.

Second. Those presenting subjective and objective mental aura.

Third. Those having no aura at all.

An illustration of the first type would be those cases that have a headache, or a gastric disturbance, immediately before a seizure. An illustration of the second—those that are apprehensive and in which one can see that the patient is mentally disturbed. An illustration of the third—the patient falls sharply, without a warning of any kind whatever.

I think the aura—the first sign of an oncoming seizure—has in many cases great significance, as it points to the seat of the initial cause or origin of the convulsion. If we find that the attacks are preceded by a headache, no matter of what type, digestive, neuralgic, gastric or toxaemic, we should endeavor to ferret out the cause and remove it, and it is always a good plan to look for the simpler things first.

I remember a man who came under my attention some years ago, suffering from marked delusions of persecution, accompanied by an intense "roaring sound" in his ears. I examined him carefully, finally testing his hearing, which was defective on one side. I immediately washed out the ear and was surprised to find several large pieces of dried to-

bacco come away. I saw him twelve hours later; the roaring in his ears had entirely disappeared and with it went the delusions of persecution.

We received a man at the Colony who had been trephined for epilepsy. For some hours before his attacks he complained of headache. We found, after a careful and exhaustive examination, that he suffered from a uric acid diathesis. We put him to bed and treated him in accordance with the principles laid down by Haig for such cases, and with marked benefit to the patient.

The best we can do in those cases that are suddenly stricken without any warning is to have them carefully watched to note, if possible, the very first evidence of physical aura, such as the twitching or jerking of a hand or foot. I recall one case where the aura commenced in the form of a mild jerking in both hands simultaneously, the movements increasing in almost rythmical order as to time and force, until the arms were thrown above the head, then, unless the attack was aborted—as was done in this case for several months—it would come on. In these cases there often follows a weakening or partial paralysis, the degree of which depends upon the severity and number of attacks and the stamina of the individual. If the left arm is weakened or exhausted out of proportion to the right, then we may fairly assume that the chief center of disturbance at the time of the seizure was in or near the left arm center of the brain.

To speak in detail of the treatment of idiopathic epilepsy is impossible in so brief a paper, so I will give as concisely as I can the substance of the treatment of such cases at the Craig Colony, where we have discharged many cases as cured. And I will add, that while it may be difficult to carry out the home treatment of an isolated case along the same lines followed at the Colony, it can be largely approximated, and with good results.

First. The colonizing of the patient means that he is

placed under such restrictions that we can at all times have entire control of his acts. This is most essential, for the nature of his disease causes him too frequently to disregard the laws of health and indulge in many dissipations.

Second. We treat him as an individual at first, along broad hygienic lines, for many come to us in poor general health, and the first demand is that they be built up, reconstructed physically.

Third. To do this we employ a diversity of means: Medicines, systematic occupation, gymnastic exercises, baths, special feeding, and the use of such moral agencies as may be essential.

Fourth. All the while he is being studied for aura; for the presence in the blood, urine, or other secretions, of noxious substances that may cause or help to cause the disease.

Fifth. He must eat only such food and only in the manner prescribed for him. We regard this as most essential.

Sixth. He must not over eat, for by tradition founded on fact, he is apt to gormandize; and if he is habituated to the excessive use of tobacco he should be cautioned to be moderate in its use.

Seventh. He is not permitted to use alcoholic stimulants in any form, or to any extent. Tea or coffee, if properly made for him, he may take in moderation without harm; but it is seldom properly made for him.

Eighth. At the Colony every epileptic received is made to suffer a complete change from his previous mode of life. If he was of sedentary habits, he is put out in the fields, under the sun and in the air; not abruptly so, but gradually. His entire life, as far as can be, is thrown into new channels. If, when received, he is feeble in health, as many of them are who have suffered from long neglect (and I am speaking of the indigent classes), he is put into the hospital, fed on light, nutritious foods, and every effort made to build him up.

Ninth. If we see at any time that he fails easily under any mental strain, such as study or close reading, he is made to quit such pursuits and use his body only.

Tenth. If his body is big and strong and he is weak intellectually, then the opposite course is pursued, the object always being the coequal development of the mind and body —no vitiation of one at the expense of the other.

Eleventh. If he has any natural bent or inclination in the way of study or work, it is recognized and encouraged, for mental occupation in the treatment of epileptics is an important factor.

If we pay due heed to all the foregoing, and pay it long enough, we may, as we have learned by experience, expect a cure in six to eight per cent. of all cases that come under our care.

In 1898, seven patients were discharged recovered from the Craig Colony. All of them were kept at the Colony two years after the last seizure, and to study the effectiveness of the cure, they have been kept under observation by correspondence since. One, a young woman congenitally of feeble mind, was discharged under protest, as her friends desired her transfer to an institution for the feeble minded. We felt that under unfavorable conditions as to food, habits, and environment her attacks would recur, and they did, and she was returned to the Colony.

The remaining six have had no seizures since they left the Colony. They acquired various trades while under treatment, and are now earning their support. One of them is deserving of brief mention because his cure was little short of miraculous. It was that of a young man who had been an epileptic for eighteen years prior to his admission.

His attacks were mixed in type and occurred for fifteen years at the rate of three to five in twenty-four hours, both by day and by night.

He presented no marked evidences of physical infirmity, beyond a slight halting gait, due probably to an early palsy, or an exhaustion paralysis. He was extremely irritable in disposition, querulous and effeminate in speech and manner, and entirely destitute of any ambition.

Concisely summed up, he was a product of defective ancestry; defective early training; of general early arrested development, on all of which was engrafted the destructive effects of frequent epileptic seizures, and of the long continued use of the Bromides.

We classed him among the cases of malnutrition; put him on a generous diet of proper food; on tonic remedies that build up and do not destroy; protected him from himself by a vigilance that was never relaxed; and as soon as he was able, placed him as apprentice to the farmer, and his regeneration was remarkable. The first month he had the usual number of attacks, 110; the second, 98; the third, 3; and no more after that. Later he acquired the printer's trade; did enough work for the Colony in two years to reimburse the State for the cost of his cure, and is to-day supporting himself and his mother by the results of his labor as a printer.

But, let me add, the Colony system at the Craig Colony is yet far from complete and what may be done in the way of curing epilepsy when the Colony has for some time made use of its greater factors that are to come in the way of the scientific investigation and study of the disease, just now beginning; when the schools, shops, and trades, amusements and perfect home life are all acting in forceful harmony for the attainment of one end, it is yet too early to be foretold, and to repeat that in a modified way, the valuable principles of Colony treatment, can be made to apply largely in the home treatment of this obstinate disease.

NERVE INFLUENCE IN THE PRODUCTION OF LIVER DISEASES.

JULIUS POHLMAN, M. D., Buffalo, N. Y.

Speaking of fatty degeneration of the liver, Osler says: "Certain poisons, of which phosphorus is the most characteristic, produce an intense fatty degeneration with necrosis of the liver cells." That's all, and if it means anything, it means that aside from the action of poisons, we know nothing about fatty degeneration of the liver.

The most careful investigations for nerve action in the liver have, up to date, been equally unsatisfactory. The conclusion that the sympathetic system sends over the splanchnics vaso-constrictor and vaso-dilator nerves, and the cerebro-spinal system only the latter over the vagus, tells us practically very little.

As far back as 1857 Claude Bernard demonstrated that injury to the floor of the fourth ventricle produced a diabetic urine in the animal experimented upon. We are probably justified in claiming that this injury disturbed the hepatic circulation, thereby preventing the liver cells from acting sufficiently upon the blood, and allowing an excess of sugar to escape by the hepatic vein to be excreted by the kidneys. But whether the effect of this injury was carried to the liver by the vagus, or the spinal cord or the sympathetic fibres we don't know.

In a subject as obscure as this, every little helps, and in this spirit I offer the following short note to the clinicans for further investigation and, if possible, practical application:

In a series of experiments on dogs carried out in the Physiologic laboratory of the Medical Department of the

University of Buffalo during the past four years, section of one of the vagi produced in every case fatty degeneration of the liver; the contents of the hepatic cells changing into fat globules at times to such an extent that drops of oil oozed from the organ on handling. When the right nerve was cut, the liver degenerated faster and more extensively than after cutting of the left. The biliary function of the liver seemed to progress regularly, for in all cases the gall bladder was well filled at death with apparently normal bile, and during the time that the animals were kept alive, from two to eight weeks, they did not appear to suffer from digestive troubles excepting a slight diarrhoea which may have been due more to disturbances in stomach and small intestines than to the liver. How long such animals could have lived and what would finally have been the cause of death, must remain the subject of additional experiments and decide for us the interesting query, How long a fair condition of health and a hopelessly diseased liver can exist in the same body?

If we remember the intimate connections of the vagus nuclei around the fourth ventricle with almost every other nerve of the body, we can understand how many complicated abnormal reflexes can find their way to the vagus nerves, and if from some cause or other a reflex from somewhere inhibits the hepatic fibres, it seems within the realms of possibility that in conformity with the results obtained from the above mentioned experiments, a partial or total fatty degeneration of the liver may result.

TWO CASES OF LARGE RETAINED HERNIA. OPERATION. FATAL RESULT DUE TO INTERFERENCE OF RESPIRATION AND HEART'S ACTION BECAUSE OF INTRA-ABDOMINAL PRESSURE.

By Henry Orlando Marcy, M. D., Boston, Mass.

I make the following report of two fatal cases of hernia, since the lesson to be derived therefrom must prove of exceptional value at the present time, when most cases, no matter how large, of old retained hernia are considered operable.

Case 1.—May 20, 1894, I assisted my friend Dr. John C. Irish, of Lowell, in the following operation: W. T. B., aged forty-five. He had been admitted to the General Hospital, because of an enormous inguinal hernia of the left side. He had been under observation for some time and an operation was deemed unavoidable, because of the extreme tenuity of the enveloping structures. The integrity of the lower portion of the sac was endangered by the necrosis of the skin, presenting the appearance of a slowly spreading ulcer. The man was of good habits, in good general health and easy circumstances. He had lived a sedentary life from choice, as also during the later years from necessity. Over six feet in height, he weighed two hundred and fifty pounds, yet did not seem excessively corpulent.

The abdomen, on the contrary, was comparatively thin, with a marked retrocession below the umbilicus. When standing, the tumor extended nearly to the knee, and its largest circumference measured twenty-seven inches. The

operation was performed in the St. Joseph's Hospital with the assistance of Dr. M. G. Parker and the other members of the staff. I am indebted to Dr. Parker for the accompanying photograph. The contents of the hernial tumor consisted of the larger portion of the large intestine, with many fatty epiplicae and several feet of the small intestine. The extraordinary anatomical feature was the extreme thickness of the mesentery of the large intestine, which presented a fatty infiltration, by estimate more than two inches in thickness. On this account, it became necessary to divide the greatly enlarged ring upward nearly to the crest of the ileum.

There were no adhesions to the sac of importance, the intestines had been well emptied and were of normal color and appearance. The patient was placed in a pronounced Trendelenburg position, the abdominal wound was held well apart with retractors and, little by little, the reposition of the intestines was effected. The small intestine was easily returned together with a considerable portion of the large bowel. The parietal wall of the abdominal cavity did not appear to be unduly rigid and, little by little, relaxed to receive the displaced organs. The great difficulty was now found to be the restoration of the thickened mesentery, which after much resistance suddenly yielded, and the contents of the hernial tumor were completely reduced. The reduction of the mass was difficult for two reasons. First, because of the lack of storage capacity of the abdominal cavity. Secondly, because of the peculiar anatomical condition of the mesentery already referred to. The abdominal wound was closed in layers as usual by buried tendon sutures and sealed without drainage.

Almost immediately upon the reduction of the mass, the respiration became shallow and rapid, with a rather small rapid pulse. The abdomen seemed unduly distended. Soon after coming out of the ether, the patient began to cough

and expectorated a frothy, bloody mucus, which continued to be the most marked objective symptom until his death, thirty-two hours after the operation. There were no especial symptoms referrable to the abdominal organs.

Case 2.—T. B. L., aged fifty-six, of Ogden, Utah, was referred to me by Drs. E. C. Rich of Ogden and E. R. Lewis of Kansas City. He was born in St. Louis, of healthy parents. Since graduation from college had devoted his life to educational work. Never sick or disabled save from hernia of the right inguinal variety. Six feet two inches in height, not over fat, yet weighs three hundred and twenty-five pounds. Noted for exceptional physical strength and development. First noticed hernia in 1882, attributed to excessive exertion from horse-back riding in the mountains.

The hernia could not be retained by a truss and soon became scrotal. It was reducible until 1891. At this time it was about half its present size. Has been retained in a suspensory bag supported from the shoulders. First strangulated in 1884, again in 1886. Both times was reduced with the greatest difficulty. Not strangulated since 1886, but has increased slowly in size up to the present. He is a great sufferer in every position of the body, oftentimes comparatively little relieved by being in bed.

Notwithstanding the enormous size of the tumor, the intestinal function is comparatively little impaired. The body is well nourished, muscles exceptionally well developed. The abdominal wall thickened from fatty deposit. When standing, the scrotal tumor reaches nearly to the knee.

Measurements.—In median line the base of the tumor from the pubic bone is fifteen inches, to the penial opening five inches, from penial opening to base ten inches.

Transverse measurement.—Just below the pubes twelve inches; four inches below, the narrowest part, eight inches;

at the widest part, ten inches. Circumference at base, body attachment, twenty-seven inches; at its largest part, twenty-nine and one-half inches. From pubis to pubis, around the tumor, thirty-two inches. When standing, the entire tumor distinctly pulsates, which can be clearly seen at ten feet distant. For years the penis has been fused in the mass, the opening to which is marked by a deep dimple in the tumor. The right testicle is seen on the surface of the tumor about six inches below the pubis. Weight of tumor estimated at forty pounds.

Admitted to the hospital July 9, 1899. Put to bed with foot of the bed elevated. Moderate doses of saline cathartics acted readily upon the bowel, inducing a mild diarrhea. Only beef tea was administered for thirty-six hours prior to the operation. The chief difficulty apprehended was the want of space in the abdominal cavity for the displaced organs. Retention in bed caused a considerable diminution in size of the tumor which was more or less resonant throughout. By elevation of the mass, under gentle pressure, the tumor was easily reduced to about two-thirds its size when standing. Keeping in mind the history of Case 1, I advised a prolonged rest in bed under diet, to which the patient objected for a variety of reasons. Operation was therefore determined upon, which I performed July 12, assisted by Drs. Don and Lockhart, of Cambridge, and Dr. McKechnie, of Somerville.

Patient took ether easily and respiration was unimpeded and undisturbed until after the replacement of the abdominal organs. Patient was placed in the Trendelenburg position. I made the incision over the tumor from a point opposite the penial opening which was extended half way to the crest of the ileum. This free opening readily exposed the contents of the sac. A wide portion of omentum, not much changed in consistency or character, was lifted upward, covering a nest of several feet of small intestine.

Through the enlarged abdominal opening these were replaced almost by gravity. There remained nearly the entire large intestine with many fatty epiplicae, with the mesentery infiltrated with fat, estimated to be fully two inches in thickness. The appendix was the largest I have ever seen, measuring nearly six inches in length and quite the size of the index finger.

Little by little, with very considerable difficulty, the large intestine was restored to the abdominal cavity, the lower portion being the last to be returned, and when it finally yielded, it did so with a suddenness quite surprising. We all immediately remarked the extraordinary distention of the abdominal cavity to aldermanic proportions, quite unexpected, although fully appreciating the enormous size of the tumor. However, the abdominal wall did not seem unduly tense. The omentum was now easily replaced and folded accurately over the readjusted intestines and retained with a pad of gauze. There were only slight adhesions, one or two at the very base of the sac and along the outer line of the inguinal ring.

The sac was separated from the adjacent parts without much difficulty, sutured across its base and removed. The testicle was enlarged to more than double its usual size with a most extraordinary elongation of the cord. On this account it was thought wise to remove it. From the point of division of the cord to the base of the testicle it measured twenty and one-half inches. The original opening was estimated to be about five inches in diameter, and this was enlarged so that the opening extended upward nearly on a line drawn from the umbilicus to the crest of the ileum.

The anatomical displacement of the structures was interesting. The fibers of the external oblique were easily traced two inches below the pubis, showing that the external abdominal wall had been displaced downward by the dragging weight of the tumor. The cremasteric fibers were de-

veloped to many times their normal size, and before the completion of the operation the contraction of the dartos was most remarkable. The omental apron, contained within the hernial sac, was estimated to measure twelve by fifteen inches and possibly to weigh two pounds. There were no bleeding vessels of importance, and there now remained simply a large opening in the abdominal wall for closure as in a laparotomy.

The abdominal wound was closed in layers by heavy sutures of kangaroo tendon and the wound sealed with iodoform collodion without drainage. A large, well formed penis now became normally apparent. The operation lasted a little more than one hour. Patient recovered comfortably from the ether without nausea and was soon restored to normal consciousness.

The respiration, however, which before had been about sixteen per minute, rose at once to forty, and the pulse to one hundred and thirty. The temperature prior to the operation was normal, the reactive temperature twelve hours later was 102°, when it slowly declined to an average of about 100°. The heart's action slowed down in proportion, averaging a little over one hundred pulsations per minute. The respiration, however, was out of proportion rapid, averaging quite thirty per minute. (See chart).

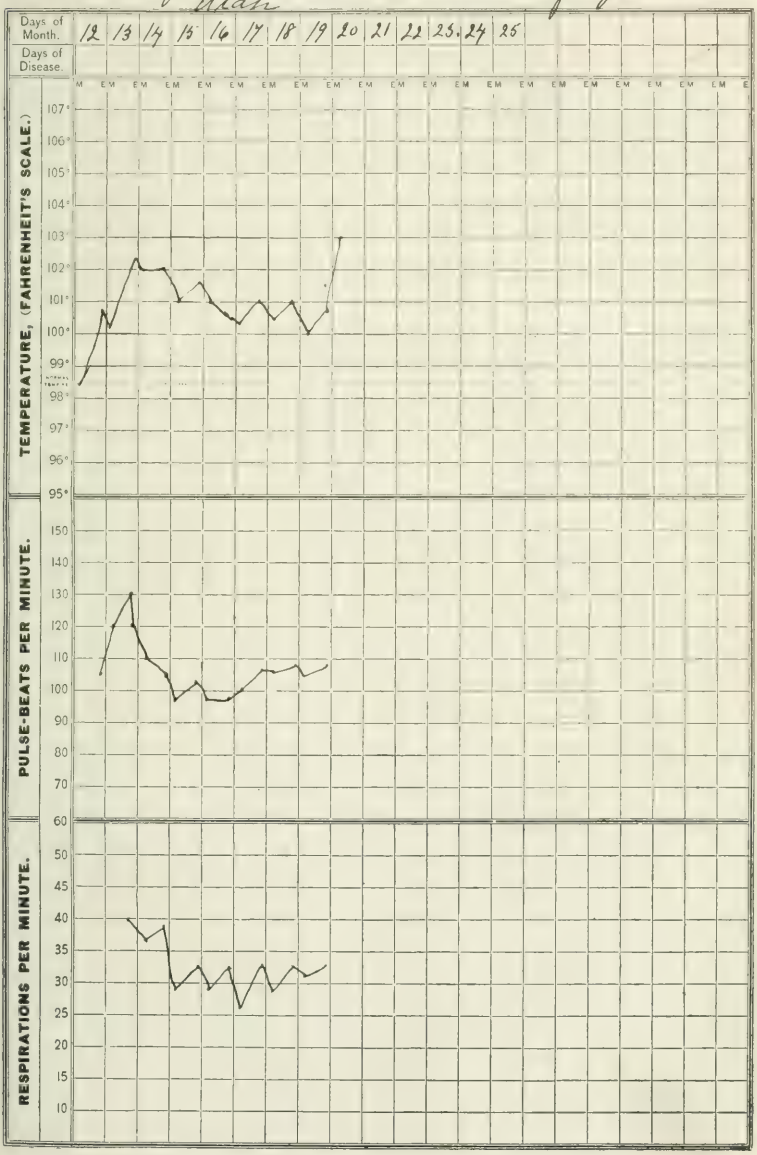
Death occurred on the morning of the 20th, the ninth day after the operation. There was at no time much suffering, except from rapidity of respiration. The oxidation of the blood was not especially lessened, a mild catharsis was easily maintained by small doses of salines. There was never nausea and digestion of small quantities of food, often taken, continued perfect. Sufficient sleep was obtained almost without medication.

The urine was abundant and normal in character. The upper portion of the wound partly opened owing to tension.

CLINICAL CHART.

NAME, Mrs. J. B. Lewis. 855 WARD BED NO. DATE July 9. Received

MEDICAL RECORD BOOK, NO. Ogden Utah PAGE DISEASE Hernia of Right side.


Days of Month. 12 13 14 15 16 17 18 19 20 21 22 23. 24 25
Days of Disease.
M EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM EM E
TEMPERATURE, (FAHRENHEIT'S SCALE.)
107° 106° 105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95°
PULSE-BEATS PER MINUTE.
150 140 130 120 110 100 90 80 70 60
RESPIRATIONS PER MINUTE.
50 45 40 35 30 25 20 15 10

Patient continued bright, cheerful and hopeful to the last. I thought him practically out of serious danger after the second day, notwithstanding the recognition of the greatly increased intra-abdominal pressure. At no time did the distention of the abdomen appear to be materially lessened.

Death ocurred rather suddenly. Autopsy entirely negative. Peritoneal cavity was found non-infected. Intestines were normally disposed and not unduly distended. The omentum had remained in its replaced position and was firmly agglutinated to the abdominal wall at the site of the operation. Although for many years especially familiar with the literature of operative measures for the cure of hernia, I do not recall any cases where operation has been attempted upon herniae of such enormous size, or where the histories have been in any way comparable with these above given. It is on this account that I have reported these in more than ordinary detail.

I have operated upon many very large herniae, every one of which, where the integrity of the intestinal canal has not been involved, has made an easy recovery. Some of these might be considered enormous, the larger one, where the tumor measured in circumference eighteen inches and extended half way to the knee. This was probably fully as large as the average adult head. However, there was no disturbance of respiration or circulation.

In what way are we to determine that danger to life may be incurred, because of the increase of intra-abdominal pressure is the problem presented in this paper.

Certainly, until a very recent date, this question was not likely to arise, since before the days of modern aseptic surgical technic, operations of any sort were rarely advocated unless life was endangered because of strangulation of the intestine. Singularly enough, however, that remarkably clear-sighted surgeon of Paris, George Arnaud, who

published his work entitled "Dissertation on Hernia" in 1748, narrates a case worthy of report in the present connection, together with his quaint comments upon the same.

"Mr. Bondon recommended to my deceased father a man of forty years of age, and of a very strong constitution. He was extremely fat, and six feet and an inch high, French measure. His name was Mr. Trogneux. He was an inhabitant of Clamsey, in the diocese of Auxerre. He had an hernia from his infancy, which had never re-entered. It was thirty-two inches in circumference at its lowest part, nineteen at the ring, and sixteen in length. For more than ten years his penis had been lost in the bulk of the tumor, so that the preputium formed a kind of depression like that of the navel, so that in making water his urine was diffused over all the tumor, which was very troublesome to him. As he was a timber merchant, his business obliged him almost every day to ride forty or fifty miles on horse-back, which induced him to invent a large cavity in the fore part of his saddle, in which he placed his tumor. Being at last reduced to such a condition that he could no longer follow his business, and being afraid that this disorder, no less terrible than insupportable, would soon put an end to his life, he determined to apply for relief. It was in 1726 that he was introduced to us. He found a great deal of comfort from the recent example which my father and I gave him, of the cure of a similar disorder. He submitted to every thing we prescribed, either for his relief or radical cure, but on condition, said he, that he should have a little to eat, for he was a prodigious glutton. Persons of this kind may observe a very strict regimen, even by eating a little. We may therefore recede from the general rule in their favor, without any fear of doing harm, for their great appetite requires this kind of liberty. He was blooded several times, then purged, and afterwards used twelve or fifteen baths. Twice

a day I made strong embrocations of his abdomen with oil of melilot and covered the whole tumor with a plaister, composed of the emplastrum de Vigo, prepared with a good deal of mercury, of the diabotanum, and the mucilages; and this plaister I renewed every four days. We made him every morning take ten, twelve, fifteen, or twenty grains of mercur. dulc. He drank plentifully, and had four emolient and purgative clysters injected every day. Every four days we purged him with cassia, with an intention to evacuate the humors and prevent a salivation. This method succeeded very happily, for the evacuations lasted sixteen days, and were so copious, that they every day redoubled the patient's astonishment. The tumor during this time had lost about three-quarters of its bulk, and more than a half of the remaining quarter we made to re-enter by *taxis;* so that the hernia being thus reduced to an eighth of its bulk was in a condition to be contained in the hollow cushion of a truss. It afterwards diminished insensibly for eight or ten days, during which time we took care to fill the cavity of the cushion in proportion as the bulk of the tumor diminished. On the thirty-sixth day from the first venesection, the parts re-entered all together, and the testicle also. We then used a convex instead of the concave cushion. The patient in a very short time resumed his strength and flesh, and followed his business with a great deal more vigor than ever he had done. The first thing he did at his return home was to make his wife pregnant, with whom he had had no amorous converse for ten years before. He quitted the use of the truss eighteen months after; that is to say, in 1728. Twelve years after he had occasion to come to Paris, where he called for me immediately on his arrival, rather to testify his gratitude than for any other reason. But as I did not know him, he put me in mind of everything that had happened in 1726. I examined the parts, which I found so firm

and solid that one could have hardly imagined that he had formerly labored under an hernia. The skin of the scrotum was returned to its natural state, only it was very thick, and the bottom of the scrotum, which had approached to the ring on account of the herniary sac of the testicle, was fixed or glued over the ring. This portion of the skin seemed to make a kind of stopper which filled the cavity of it. But though the disorder had no appearance of a relapse, I ordered the patient to wear a truss by way of prevention; the reason of which I shall afterwards give in a particular instance. From this observation it is sufficiently evident that what at first appeared a paradox, is a truth easily perceived by persons of penetration, but as it may perplex the more ignorant and illiterate part of mankind, I shall, for their sake, render it still more intelligible by a method of reasoning as clear and perspicuous as I possibly can. The parts had insensibly accustomed themselves to this new abdomen which nature had formed for them. They had there fixed a permanent residence for themselves, whence it was impossible for them to remove, on account of the adherences they had contracted. Without the methodical assistance afforded it was impossible that they should ever of themselves have re-entered the abdomen. But by the disposition into which they were put, they were forced to resume their natural place, though they were lean and emaciated, yet when they were reduced, they resumed their former bulk, in the same proportion as all the other parts of the body resumed their flesh. Now they could not slip out again, after they were once in the abdomen, because they were become larger than the diameter of the ring. So that the patient must necessarily have been cured long before he left off the use of the truss.

The following fable applied to this subject will more sensibly enable us to comprehend what hinders these sorts of

hernias from re-entering and what obliges them to remain in the abdomen, after they are reduced:

> "Into a wicker cask, where corn was kept,
> Perchance of meagre crops, a field mouse crept;
> But when she fill'd her paunch, and sleeked her hide,
> How to get out again, in vain she try'd.
>
> "A weazel, who beheld her thus distress'd,
> In friendly strain the luckless mouse address'd:
> 'Would you escape, you must be poor and thin,
> To pass the hole thro' which you enter'd in.' "*

I am quite sure that it is safe to arrive at the conclusion that in both Dr. Irish's case and my own, the fatal issue is to be attributed to the sudden marked increase of intra-abdominal pressure, especially unduly limiting the function of the diaphragmatic muscle. I think that the teaching of the wise Arnaud should be carried into effect, for a considerable period before operative measures for the cure of such enormous herniae are to be undertaken. It is very probable that in this way few, if any, hernia will prove too large to be safely submitted ultimately to surgical methods of cure.

DISCUSSION.

Dr. W. B. De Garmo, of New York county, said that most of those interested in the treatment of hernia would appreciate the cases reported. The time had gone by when surgeons hesitated to operate upon ordinary herniae, but the time had arrived when they should know where to draw the line. In his opinion it was advisable to keep these cases of large hernia in bed for a considerable time prior to operation, and also to reduce the hernia as far as possible and keep the parts reduced, so as to accustom the abdomen to their presence. Another point of importance was whether entire removal of the omentum which had been protruded would relieve intra-abdominal pressure. This meant a prolongation of the operation—also a serious matter. It was a difficult point to decide. He had had two cases of the class under discussion. The first had been in a poorly nourished man seventy years old, whose hernia had not been reduced for twenty years. The man had been kept

*Horace, Lib I, Epist.

in hospital for about one week, and had proved to be a very unruly patient. He would never use a bedpan and it was difficult to feed him because it was not in accordance with his religion. Nearly two-thirds of the hernia had been reduced during this period, and at the operation the entire mass had been reduced, the technique having been essentially that recommended by the reader of the paper. There had been no difficulty with respiration or circulation after operation, but on the second night, in the absence of the nurse, the man had gone to the toilet. He had been discovered there and sent back to bed, but shortly after this he had gone into collapse, and died. The second case operated October 12 of the present year was that of a man seventy-four years old. The circumference of the was in a man seventy-four years old. The circumference of the hernia was thirty inches, the mass reached to within two inches of the knee; and the distance from inguinal ring to bottom of scrotum was eighteen inches. During the two or three weeks the man had been under observation before the operation, his pulse rate had seldom been above 55, and, at times, fell as low as 44. There had been oedema of the extremities and fluid in the abdominal cavity, and some albuminuria. Under treatment these unfavorable symptoms had disappeared, and in three weeks he had succeeded, with the patient in bed, in reducing over two-thirds of the protruded mass. It was as between staying in bed for the remainder of his life or of submitting to the operation; the patient had chosen the latter. As an aid to rapidity the cord and sac and everything had been tied off at once. The operation lasted altogether about fifty minutes. While there had been no difficulty in breathing, immediately the pulse rate had risen to 72, and now, fourteen days after operation, was still between 65 and 70. The heart action was, however, good, and the indications were that the difficulty with his heart before the operation had been due to this enormous mass in the scrotum. It is probable that this man was now out of danger. Nitrous oxide gas, followed by ether, had been used in the production of the anaesthesia, and at the present time there was no albuminuria.

Dr. Marcy said that herniae of the type under consideration were well worthy of discussion. In a number of instances he had removed large masses of omentum, but in the case reported the omentum, although of considerable size, was normal, and he had felt it wise to keep it, if possible, as a reinforcement.

THE ADVANCE IN OUR KNOWLEDGE OF TYPHOID FEVER.

HERMAN M. BIGGS, M. D., of New York County, introducing a discussion on Typhoid Fever.

No apology is needed in introducing a discussion on typhoid fever, for although no other medical subject excepting possibly tuberculosis, has been more written about, yet for many reasons typhoid will always remain of absorbing importance, and the advance in our knowledge of this disease in its various phases in recent years and the terrible devastation created by it among our troops during the war with Spain have created a renewed interest in it.

The history of the development of our knowledge of typhoid fever forms an exceedingly interesting and instructive chapter in the history of medical progress. In former times the fevers (so-called) alone caused a much greater mortality than the total mortality from all causes now occurring in favorably situated localities. Under the head of fevers in the death returns were included typhoid, typhus, malarial fever, and probably many other forms of disease whose nature was unrecognized. Differentiation was not possible in the existent state of medical knowledge, although the occurrence of continued fever with intestinal ulceration was well known, and the characteristic types of malarial fever were clearly recognized.

The first great step in advance was made through the observations and writings of Shattuck, Gerhart, Bartlett and Flint in this country, and Sir William Jenner in England, which defined the characteristic anatomical lesions of typhoid fever and made possible its clinical differentiation from typhus. The first period in the history of our knowl-

edge of the disease may be said to have terminated then, at about 1850. The second period may be said to extend from this time to 1880, when the discovery of the typhoid bacillus by Eberth was announced, although for a number of years Eberth's observations had but little influence. During this second period important contributions were made as to the morbid anatomy, clinical history, diagnosis and treatment. The third period extends from 1880 to the present time, and it is in this that the greatest advances have been made.

Until accurate bacteriological investigations corrected and extended our knowledge, enteric fever seemed a better name for this disease than typhoid fever, as it indicated the site of what appeared to be the essential anatomical lesions. The involvement of the solitary follicles and patches of Peyer in the ileum and the presence of ulceration in them were essential post mortem for the diagnosis. Although many observers held the opinion that a typhoid infection might exist without the presence of ulceration, or indeed of any changes in these structures, yet the proof was wanting. Now, however, there is abundant evidence to show that while the primary localization of the typhoid infection in the lymphatic structures of the small intestines is the usual one and is present in a very large proportion of cases, yet the primary infection may be centred in other organs or tissues of the body, or it may take the form of a typhoid bacillus septicaemia. Thus carefully observed cases have been described in which the identity of the typhoid bacillus has been established, but in which the primary site of the infection was situated in the respiratory tract, the urinary tract and the mesenteric glands and the spleen; and rather numerous cases have been reported in which the intestinal ulceration was confined to the colon.

Many cases also of cholangitis, cholecystitis, meningitis, pyelitis, laryngitis, and inflammations of other mucous membranes have been reported as having resulted from the

action of the typhoid bacillus. In the large majority of these latter the lesions have occurred secondarily and as complications of typhoid lesions of the small intestine. Of course those cases in which were various complications due to microorganisms, such as the streptococcus, staphylococcus, colon bacillus, etc., are not referred to in this connection. It is evident, therefore, that we may no longer properly speak of typhoid fever as enteric fever, unless under this latter term are classed only those cases in which the infection is localized primarily in the intestines.

From our present knowledge it seems probable that at some time in the course of most cases of typhoid fever the bacilli are present in the circulation in small number. Only occasionally, however, do they produce local inflammations outside of the abdominal lymphatic system. Their entrance in the majority of instances, but not invariably, is no doubt through the lymphatic structures of the intestines. That the typhoid bacilli do make their way into the general circulation at some time in the course of typhoid fever in the majority of cases is shown by the presence of the bacilli in the rose colored spots of the typhoid eruption; in the urine during the later stages of the fever, and sometimes for long periods after the beginning of convalescence; and finally by the possibility of the demonstration of these organisms in the blood in many cases by proper methods of examination. Still further evidence is afforded by the presence of the bacilli in various organs and tissues of the body, aside from those of the abdominal lymphatic system, after death, an observation which can only be interpreted as giving testimony to their presence in the circulation at some time during the course of the disease. Several years ago Koch told the writer that it was a common practice in the Institute for Infectious Diseases in Berlin to make cultures from the rose spots by snipping out portions of the skin for the positive diagnosis of this disease. We do not

know why in rare instances the typhoid bacilli produce lesions in various parts of the body and in others do not—although present in the circulation—but this difference is probably due in part to something which causes a local diminution in resistance, and in part also perhaps to differences in the dose and intensity of the virus in different cases. As is now well known any kind of injury to the tissues of the body render them more susceptible to various infections.

In no phase of our knowledge of typhoid fever have greater advances been made than in the means for accuracy of diagnosis. The observations of Pfeiffer and Gruber, showing that the blood serum of persons ill with typhoid fever exercises a peculiar agglutinating influence on the typhoid organisms in recent cultures, was reduced by Widal to a form in which it was practically available for diagnostic purposes. This test has proved of inestimable value in affording confirmatory evidence, not only in the routine diagnosis, but especially in the differentiation and identification of obscure cases. While a negative result from the Widal test cannot be regarded as having much significance, a positive reaction in proper dilution is to be regarded as almost conclusive proof of the recent or earlier existence of typhoid fever in the subject. If the reaction develops while the patient is under observation—being absent in earlier and present in later tests—it is, in my opinion, to be considered as almost as strong proof of the existence of typhoid fever as the demonstrations of the bacilli themselves. Thus while the Widal reaction may be very late in its appearance, may sometimes appear only during a relapse, and may be entirely absent in undoubted, and even in fatal cases of the disease, and rarely appears before the end of the first week, yet when present it is of the greatest possible value in the diagnosis, and the test when present in a dilution of 1 in 50 is to be ranked in importance in the

value of the positive information which it gives next to that afforded by the demonstration in various diseases of the presence of the specific organisms causing them, as the tubercle bacillus in tuberculosis, the diphtheria bacillus in diphtheria, and the cholera bacillus in Asiatic cholera.

Still more valuable information may be derived (but at much greater expenditure of time and skill) by the demonstration, which is possible in many cases, of the typhoid bacilli in the faeces, urine, rose spots, or blood of typhoid fever patients. The newer methods of differentiation of the typhoid bacillus from the members of the colon group, devised by Elsner, Hiss and others, have made such demonstrations practicable in many cases where good laboratory facilities are at command. These methods, however, must be rendered much more simple and exact before they can be regularly employed as routine measures.

In the last two or three years renewed attention has been devoted to the value of the diazo-reaction of Ehrlich in the diagnosis of this disease. Nearly all observers are agreed as to its almost constant presence in a decided form in the early stages. Krienkiewicz, as the result of over 16,000 tests, reports that it is always present in the first and second stage of typhoid fever. Michaelis, from Von Leyden's clinic, states that it is almost invariably present early and sometimes as late as the twenty-second day. He regards it of great value in the diagnosis of early and doubtful cases. Thus it may be present between the third and seventh day before the Widal reaction occurs, before the eruption appears, before there is any considerable enlargement of the spleen, and when constipation exists. In such cases a decided diazo reaction may be of much value in confirming the diagnosis. It is also very frequently present, unfortunately for its diagnostic value, in general miliary tuberculosis—an affection which is frequently mistaken for typhoid fever. The reaction may be of great service in the

early diagnosis of relapses of typhoid fever, as it is usually present in the first days of the relapse. The increase or decrease in the intensity of the reaction has much prognostic value, and its gradual disappearance in a case indicates an abating of the infectious process and of the fever. In my own experience it has been present in a very large proportion of the cases of typhoid fever occurring in my service during the last two years at Bellevue and St. Vincent's Hospital.

Important observations have been made in recent years in regard to the relation of typhoid fever to disease of the biliary passages and the gall bladder. The frequent infection of the gall bladder by the typhoid bacillus in typhoid fever has been well established, this infection apparently taking place, not through a direct extension from the intestinal canal, but through the portal circulation. Probably in many instances the presence of the typhoid bacilli in the gall bladder and biliary passages is not followed by any changes in these parts, but sometimes apparently cholecystitis and cholangitis result, or infection in the gall bladder may serve as the starting point for the development of gall stones. The long persistence of the bacilli in the gall bladder in some cases is a remarkable feature of these infections, the bacilli having been found in a few instances many years after the attack of typhoid fever.

The results of preventive inoculations against typhoid fever, although still very incomplete and inconclusive, seem to afford good ground for hoping that they may be of the greatest service in the prevention of this disease among troops and among those who for any reason are much exposed to possible infection because of the nature of their occupation or sanitary surroundings. Wright, of the Army Medical School at Netley, has been for a number of months in India inoculating English troops who volunteered to receive treatment. It is stated by him that of 200 attendants

at the Maidstone Asylum, 95 were inoculated and none contracted the fever during the epidemic there, while of 105 who refused to undergo the process, 19 suffered from the disease. At Khartoum, of 8 young subalterns, 6 consented to receive the inoculations, the other two declined, and of these one was ill with enteric fever and the other died, while of the 6 inoculated officers all escaped. Wright states that he has inoculated 3,000 soldiers, and it is reported that many of the troops going to South Africa are being subjected to this treatment. Preventive inoculations have also been advocated by Pfeiffer, Marx and Haffkins. These are made with attenuated or sterilized cultures, and it has been shown experimentally that they grant immunity to animals. They are followed by a febrile reaction, lasting from one to three days, and some local pain, swelling and tenderness at the site of the injection. The blood serum of persons subjected to them acquires agglutinating properties on typhoid cultures similar to that following an attack of the disease.

Very little is to be said as to the specific treatment of typhoid fever. All of the attempts thus far made in the production of a curative serum have been followed by unsatisfactory results, or at least the favorable results reported have not been confirmed by other observers.

The bacteriological investigations have not only greatly broadened our conceptions in respect to the nature and manifestations of typhoid fever, but they have also contributed in a most material way to our knowledge of prophylaxsis. How unsatisfactory do the earlier methods of disinfection now seem when we know that the urine, which has usually received little or no attention, contains the typhoid bacillus at some period in the course of the disease, especially during convalescence, and that these bacilli may be present in almost incredible number—estimated by Gwyn in one instance as 500,000,000 in each c. c.—and that they may

remain present in the urine for months and probably for years.

In the observations made in the laboratories of the Department of Health—the examinations being made largely by Dr. Hiss—out of 51 cases of typhoid fever examined during convalescence, in the urine of 7, or about 14 per cent., typhoid bacilli were found, in some one instance in large numbers, repeatedly, and as late as the ninth week. They are really present, however, according to our observation, early; for in 80 cases examined for diagnosis, or for confirmation of diagnosis, chiefly within the first two weeks of the disease, in only two instances were the results positive, and one of these was a case of renal infection by typhoid bacilli and not presenting at all the clinical features of this disease.

The bacilli are undoubtedly sometimes much more numerous in the urine than in the faeces; but their presence in the urine is not necessarily in any way associated with the existence of renal disease. Specimens of urine containing them may show no evidence of any abnormality in the kidney or any portion of the urinary tract. The urine may be perfectly clear and limpid and show nothing in any way abnormal excepting the presence of the bacilli, or in some instances it may be slightly cloudy. Cases have been reported, however, and especially cases of so-called renal typhoid, in which the presence of bacilli in the urine has been associated with acute nephritis and sometimes with pyelitis or cystitis. In some cases in which the organisms remain for long periods after an attack of typhoid fever it seems probable that the bacilli simply multiply in the bladder without producing any change in the composition of the urine or in the mucous membrane. It is evident that the danger of dissemination of infection through this, until recently unrecognized, medium may be very great.

With this new fact before us how easily can all the difficulties in the way of explaining isolated cases and peculiar outbreaks of typhoid fever be disposed of; and how perplexing and complicated become the preventive measures necessary.

One fact is much emphasized in the recent observations in this as it has been in many other infectious diseases, namely, the long persistence in some cases of the infectious element. We have only to mention the cases of diphtheria in which virulent organisms persist in the throat for months after complete convalescence; arrested cases of tuberculosis in which occasionally, without any evidence of any extension of the disease, or with apparently retrogressive changes, the cough may continue and the sputum contain tubercle bacilli for 12 or 15 years or more; influenza with the persistence of the influenza bacilli and their agency in complicating affections occurring months after the initial attack and probably the recurrence of relapses thus brought about; the presence of gonococci in gleet discharges or in the clumps of mucus from the deep urethra several years after the acute attack and their agency in the production of late complications; the persistence of the scarlatinal infection in the discharges from the catarrhal inflammations or suppurating glands left over after the complications of scarlet fever; the persistence of pneumococci in the saliva for long periods after recovery from pneumonia, and the recurring relapses of malarial fever. I say we need only mention these familiar facts to gain a renewed appreciation of the importance in the matter of prevention of the persisting organisms in the infectious diseases and their influence in the dissemination of disease. The newer observations in typhoid fever add to the accumulating mass of evidence of this nature.

The improvements in the methods of treatment of typhoid fever are best shown by the reduction in the case fatality

from this disease. Large collections of statistics of cases treated between 1850 and 1880 before the general use of hydrotherapy show that the hospital death rate varied from 18 to 36 or 37 per cent., the last excessive mortality being found under specially unfavorable conditions, as in military hospitals. Previous to 1885 the average mortality in the French army is said to have been about 37 per cent. In contrast to this it is reported by Brandt that in the Second German Army Corps, where hydrotherapeutic measures have been thoroughly and systematically carried out, the mortality is less than 4 per cent.

While cold baths have been systematically employed to a large extent in Germany since 1865, they were not in general use in other countries until a much later period. All recent reports of large collections of cases in various parts of the world show that through their systematic use the case fatality has been reduced to between 4 and 9 or 10 per cent., with an average of about 7 per cent. Where the mortality has been higher—9 and 10 per cent.—investigation has usually shown that a considerable proportion of the cases have not come under observation until the second or third week of the disease.

But while there can be no question that the use of cold baths has contributed more to this result than any other measure, I believe that improvements in the treatment in other respects have contributed in no small degree. We have learned to use drugs less and less and to watch carefully the nutrition of the patient. I believe all physicians who see many cases in consultation in private practice are impressed with the tendency of the general practitioner to do too much; too often the treatment is positively injurious. Hospital patients generally receive few drugs. The average death rate from typhoid fever in the large hospitals of the world is certainly not more than one-half, and probably not more than one-third what it was between 1850 and 1865

or 1870. The possible saving of life afforded by surgical interference in the cases of perforation of the intestine needs only passing mention in this connection, as its fuller consideration will be taken up by another speaker.

The problems presented to sanitary authorities by the more recent observations in the bacteriology of some of the infectious diseases are simply insoluble from a practical standpoint. Who has proposed any practicable method of dealing with those cases of diphtheria in which the bacilli, persisting in the throat for months after complete convalescence, retain all their virulence and remain unaffected by any local measures of treatment? It is also evident, in view of our present knowledge, that the urine of every case of typhoid fever should be, not only systematically disinfected, but that it should be examined at intervals during convalescence, and the case should be kept under observation until it is permanently free from bacilli. That such measures can at present be actually carried into effect is manifestly impossible. Fortunately, in this disease, it seems probable from the limited observations thus far made, that the methods suggested by Richardson, of irrigation of the bladder with 1 in 50,000 solution of corrosive sublimate and the internal administration of urotropin, cause the disappearance of the bacilli from the urine within a short time.

The frightful possibilities yet involved in the prevalence of typhoid fever were presented in a most lurid light during the Spanish war. In the face of all of the modern progress in the knowledge of infectious diseases and the means for their prevention, and in spite of the extraordinary advances in sanitary medicine in all its phases, hundreds and thousands of our soldiers sickened and died of this disease; and many returning home while ill or during convalescence carried with them and spread broadcast typhoid infection in many towns, villages and rural districts throughout the United States. Other hundreds and thousands of people

have since contracted the disease, as the result of dissemination of infection.

Typhoid fever, which previously prevailed particularly in the cities and large towns, is becoming more and more a disease of rural districts. In the larger cities, which are provided with a pure water supply and efficient sewerage the disease, to a large extent, is due to importation of the infection from outside. The morbidity and mortality rates from typhoid fever in New York city, for example, are comparatively low, and of the cases which occur careful investigation shows that a large proportion contract the disease outside of the city. Of those cases developing within the city limits a few are undoubtedly the result of the transmission through direct contact; others result from milk infection derived from the country districts—several such groups of cases are traced out each year—still others are undoubtedly the result of infection through the contamination of food, oysters, fresh vegetables, etc.; a few probably receive their infection while bathing in the sewage contaminated water of the North and East river; in still others the source of the infection cannot be found; but from the very limited number of these cases it is quite evident that they are unrelated to the water supply.

The cases resulting from contact are undoubtedly due to infection through lack of sufficient care in regard to cleanliness, the evidence of transmission through the air being far from conclusive. In these contact cases the infection is probably caused by the soiling of the hands, or the introduction of the infectious matter through the food, drink, or in some other way into the mouth. I believe there are few cases occurring in New York city which do not result from infection by some one of the means described, and for the most part derived from without the city limits. If a city is content to use for drinking purposes a water into which its own sewage or that of its neighbors is discharged,

as is the case in a number of cities in this and other states, the prevalence of typhoid fever cannot be considered remarkable. The permanent and considerable prevalence of this disease in any city, in view of our present knowledge, stamps the authorities as ignorant, corrupt, or grossly indifferent to the welfare of the inhabitants. All advances emphasize more and more strongly the importance of proper sanitary conditions in its prevention.

I have only attempted to indicate most briefly some of the more important recent contributions to our knowledge of this disease and desire to add just a word in conclusion as to the problem of prevention in the future.

It seems to me the solution of the problem lies in the sanitary education of our medical men and of the people. I long ago insisted upon the importance of this, and Osler has strongly emphasized this phase of the question in a recent admirable address before the New York State Medical Society. Hygiene is a subject which is not studied and not taught in this country. Its simplest elements are known to but few, even of the medical profession. There is scarcely a medical school in which the students have a single course of lectures on general hygiene which is worthy of consideration. In most of them the subject is not taught at all, excepting incidentally in connection with bacteriology and medicine. The natural result is that the medical profession as a class are very deficient in a proper knowledge of the subject, or any appreciation of its importance. Sanitary officers, generally medical men appointed through political influence, without reference to fitness, receive little or no compensation for their services, and in the smaller towns, villages and rural districts are unfamiliar with sanitary methods, wanting in special knowledge of sanitary subjects, and ignorant of the possible results of sanitary reform. They have neither the means, nor can they afford the time, to acquire the knowledge requisite for the meagre compen-

sation received. The laity, knowing still less than the medical profession, are content with the existence of bad sanitary surroundings so long as they do not offend the sense of sight or smell. Consequently, we, in the United States, who in almost all other practical matters and in those concerning the comforts and luxuries of living, are far in advance of European countries, in a matter which concerns our health and lives, are fully a generation behind.

An improvement in the existing conditions is to be brought about I believe,

First. By teaching hygiene in our public schools, our medical schools and our universities.

Second. By the establishment of schools for advanced work in preventive medicine.

Third. The education of men to fill the position of medical officers of health, and the provision for them of adequate compensation and security of tenure in office. When these measures have been instituted, and the medical profession and the laity have been gradually educated to the necessity of the maintenance of proper sanitary conditions and what these mean—the purity of the water supply, good sewerage, clean streets and clean soil in our towns and cities—then, and not till then, will the great advance in our knowledge of typhoid fever show its full effects in the reduction of morbidity and mortality; then, and not till then, typhoid fever will begin to disappear, and the last and most important advance—the prevention of the disease—will be recorded by a rapidly decreasing morbidity and mortality list, and the occurrence of such a dreadful tragedy as is recorded in the sanitary history of our war with Spain will be impossible.

THE BACTERIOLOGY OF TYPHOID FEVER.

By Wm. H. Park, M. D., of New York County.

In bringing this subject before the Association I will confine my remarks to the practical side of the question. In all characteristic cases of typhoid fever the bacillus known as the typhoid bacillus is constantly present in enormous numbers in the ulcerated Peyer's patches and adjacent mesenteric lymph nodes. The bacilli are also after the second week of the disease usually present, abundantly in the spleen and in small or moderate numbers in the blood. In pneumonia periostitis and abscess formation complicating typhoid fever the typhoid bacillus is frequently found in the diseased parts. The above statements are true for the characteristic cases of typhoid fever. Research has shown that it is perfectly possible to have infection with the typhoid bacillus without its localization in the Peyer's patches. Even fatal forms occur with no noticeable intestinal lesions. In some the disease is a septicaemia, in others there is a localization of the process in the pelvis of a kidney, in the gall bladder, in the periosteum or in some other portion of the body. It is important to recognize the occurrence of these irregular cases both from a hygienic standpoint and because otherwise we would have a false opinion of the serum (Widal) test.

The Elimination of the Typhoid Bacillus from the Body.— The typhoid bacillus is fairly constantly present in the feces of typhoid patients not as a rule because it grows in the intestinal contents, but because being thrown off from the ulcerated intestinal mucous membranes it remains alive until the intestinal contents are passed. In

the feces of some individuals the typhoid bacillus dies in the course of a few hours, while in those of others it remains alive for days and even weeks. In some indeed the bacilli increase in numbers. These facts explain the great variability in the numbers of typhoid bacilli found in the feces of typhoid fever patients and are of importance in connection with the dissemination of the disease and the bacteriological examinations of feces for diagnostic purposes. As to the value of the examinations for purposes of diagnosis the following figures and remarks have been given me by Dr. Hiss from his examinations of samples sent into the laboratories of the Department of Health of New York city. 326 different cases were investigated by him in the regular diagnostic work of the Department. These 326 cases represent about 400 specimens of feces examined. Many were positively not typhoid fever. In others the final clinical diagnosis was doubtful, in others still no diagnosis (final) was ever sent. Cases here recorded as typhoid fever are those represented by a positive clinical diagnosis at the end of the disease; a positive Widal reaction, or the isolation of the specific organisms.

These cases number 121; typhoid organisms found in 42; typhoid organisms not found, 79. Of the 42 positive cases, a serum reaction was obtained in 27, was absent in the specimens examined in 3, was not tested in 12. Of the 79 negative cases, 73 gave the serum reaction, 2 failed to give it, and four cases were not tested. Among these cases were 10 convalescent cases, in which we would expect no organisms, and 7 in which the stools had been sterilized. At least one-half of the remaining cases are represented by specimens sent very early in the disease. Many of the serum reactions recorded were only determined late in the disease after several examinations, while in the large majority of cases only one stool was examined and that one early. Subtracting the 7 cases in which sterilized stools were received, and

the 10 convalescent cases, we have 121—17=104 cases; 42 positive=40 per cent; 62 negative.

It must also be remembered that many of the specimens were in what seemed to us bad condition, often having been delayed in transit several days. The above results obtained by Hiss, as well as others, almost force the conclusion that as a rule the Widal reaction will enable us to make a diagnosis in the doubtful cases as soon as or before we can expect positive help from the culture examination. On account of the troubles necessary to obtain and examine feces, it seems to me best to rely in routine cases on the Widal examination and only when it continues to prove negative in suspicious cases and a diagnosis is important is it well to examine the feces. Thus the feces should be collected in a clean bottle, not sterilized, and sent quickly to the laboratory.

Typhoidal Cholecystitis and Cholelithiasis with long persistence of Bacilli in Gall Bladder.—Suppurative cholecystitis has long been recognized as a complication of typhoid fever. It has become now of added interest as a possible source of typhoid infection through the elimination of typhoid bacilli by the feces. Flexner found in 50 per cent. of fatal cases of typhoid fever pure cultures of typhoid bacilli in the gall bladder. The bladder may show no evidence of the invasion or they may be present. In cases where recovery takes place the catarrhal inflammation may be followed by stone formation and followiing this ulceration, peritonitis may occur. Acute suppuration is fairly frequent but formation of gall stones more rare, but many in the aggregate occur. Of 31 cases of gall stones operated on by Halsted 10 had had typhoid fever. After a time the bacilli in the bile become clumped and these clumps may represent nuclei for the deposition of the bile salts. Cultures have now been made during operations for stone from the gall bladder of a number of cases months and years after

a typhoid infection and some extraordinary results obtained. Thus in a case at Johns Hopkins Hospital, Miller obtained a culture of typhoid bacillus from a case of 7 years after recovery from typhoid fever, Cushing from a case where no typhoid had ever been known and one with an obscure history of typhoid fever twenty years before, obtained a culture.

Typhoid Bacilli in the Urine.—Of even more importance than the consideration of the presence of the bacilli in feces because less generally recognized is that of their frequent occurrence in great numbers in the urine. The results of examinations of the urine indicate that the typhoid bacilli, while not apt to be found until the beginning of the third week or even much later yet, from this on to convalescence is present in about 20 per cent. of the cases, and usually in pure culture and in enormous numbers. Of nine positive hospital cases out of 38 examined by Richardson, two died and seven were discharged. At the time of their discharge their urine was loaded with typhoid bacilli. We have noted many similar cases. In many convalescents the bacilli persist in the urine for weeks. Undoubtedly in some cases they persist for months and years, for Gwyn found them in a case of chronic cystitis which had persisted for four years following an attack of typhoid. Cases of cystitis following typhoid should always be suspected as due to the typhoid bacillus. When we think of the chances such cases have to spread infection, we realize how epidemics can start without apparent cause. The more we investigate the persistence of bacteria in convalescent cases of disease the more difficult the prevention of their dissemination is seen to be. The disinfection of the urine which can be accomplished in a few minutes by adding equal amounts of a five per cent. solution of carbolic acid should always be done, and convalescents should not be allowed to go to places where contamination of the water supply is possible without at

least warning them of the necessity of great care in disinfecting their urine for some weeks. Richardson made the interesting discovery that after washing out the bladder with a very weak solution of bichloride of mercury the typhoid bacilli no longer appeared in the urine. This treatment carried out by others has frequently succeeded, but also at times failed. Urotropin internally gr. 10 three times a day has also given good results in some cases, but even where persisted in for weeks may fail. The bacilli may disappear for a few days and then reappear.

How does infection with the Typhoid Bacillus occur?—Not only do the very great majority of cases examined bacteriologically and pathologically, but the epidemiological history of the disease prove that the chief mode of invasion is by way of the mouth and stomach. We have already discussed the development of the typhoid bacillus in the body and the paths by which it is eliminated. It is also of considerable practical importance to know the duration of the life of the typhoid bacillus outside of the body. In feces it lives for a variable time; sometimes but a few hours, usually a few days, often for a number of weeks and exceptionally for several months. As a rule, the bacilli can be detected in water no longer than fourteen days after introduction. Foote says that they can be found in living oysters for at least a month. The life of the typhoid bacillus varies according to the soil in which it is placed, to the abundance and varieties of the bacteria associated with it and according to the presence or absence of such injurious influences as high temperature, light, desiccation, etc., to which it is peculiarly sensitive. All our information indicates that the typhoid bacillus increases largely in the human body and simply remains alive for a shorter or longer time in the feces or the urine or substances contaminated by them. Exceptionally, as where milk is infected actual increase of the bacilli outside of the body may occur. The persistence

for years in chronic cystitis and cholecystitis following typhoid fever reveals two hidden sources of infection.

The bacilli may reach the mouth by means of fingers infected with urine or feces or articles of various kinds, or by the ingestion of infected food, milk, water, etc., or by more obscure ways, such as the contamination of food by flies and other insects or by the inhalation through the mouth of dust containing typhoid bacilli. Of the greatest importance, however, is the production of infection by contaminated drinking-water or through drinking milk, one or the other of these being the explanation for the majority of epidemics of typhoid fever. In many cases indirect proof of this mode of infection has been found in the known contamination of the water with typhoid feces or urine, and in some few cases it has been confirmed by direct proof in finding the bacilli. Examples of infection from water and milk have come frequently under our direct observation; for instance, a large force of workmen obtained their drinking-water from a well very near to their work. Typhoid fever broke out and continued to spread until the well was filled up. Investigation showed that some of the sick, before their discovery, repeatedly infected the soil surrounding the well with their urine and feces. Another instance of milk infection secondary to water infection was the case of a milk dealer whose son came home suffering from typhoid fever. The intestinal movements were thrown into a small stream which ran into a pond from which the milk cans were washed. A very alarming epidemic of typhoid developed, which was confined to the houses and asylums supplied with this milk. In our late war not only water infection, but food infection, was noticeable, as in the case of a regiment where certain companies were badly infected, while others near escaped. Each company had its separate kitchen and food supply, and much of the infection could be traced to the food. Of more unusual origin is the

following epidemic of ice contamination. In this epidemic the ice supply seemed to be the undoubted cause as typhoid fever practically only occurred in those houses where the ice was used. Those using the same water and milk were not attacked. It was found that in the winter (January) a case of typhoid fever occurred near the pond and the stools were thrown onto the ice. The epidemic occurred the following August.

The recent epidemic at Exeter of typhoid fever reported in the British Medical Journal (p. 930, Oct. 7, 1899) certainly indicates that the eating of shellfish is a possible cause of typhoid fever. Of 85 cases of typhoid fever reported in Exeter in August, 58 of the persons had eaten raw cockles at school picnics on July 11th and 20th at Exmouth. The cockles were taken from a mud bank over which a sewer discharged and this sewer had on its line several cases of enteric fever. Colon bacilli were found in the cockles but no typhoid bacilli. This examination was necessarily some weeks after the time the supposed infection occurred. This and similar epidemics although not absolutely proved to have been caused by the shellfish by the finding of the bacilli teach us the need of supervision of oyster beds, etc., if shellfish are to be eaten raw.

Flies are reported by Oelli to become infected with typhoid bacillus and excrete the bacilli in their feces. They certainly can transport bacilli on their feet, as we have proved by allowing them to alight on infected feces and then to walk over culture media.

Widal or Serum Reaction as Diagnostic Test for Typhoid Infection. The Typhoid Culture Employed.—It is important that the culture employed for serum-tests should be one to which we are accustomed. A culture in slightly alkaline bouillon grown for not over twenty hours, in which the bacilli are isolated and actively motile, gives the most satisfactory results. Stock cultures of typhoid bacilli developed on

nutrient agar and the tubes sealed and kept on ice remain good for months or even years. From time to time one of these is taken out and used to start a fresh series of bouillon cultures. The serum-test, is in a sense quantitative and not qualitative. By this is not meant that the agglutinating and immobilizing substances produced in the blood of a typhoid patient are the same as those present at times in normal blood or those produced in the blood of persons sick from other infection but merely that the effect upon the bacilli, as seen under the microscope, is identical; the difference being that in typhoid fever, as a rule, substances which cause this reaction are usually far in excess of the amount which ever appears in non-typhoid blood, so that the reaction occurs after the addition to the culture of far smaller quantities of serum than in other diseases.

The results obtained in the Health Department Laboratories, as well as elsewhere, have shown that in a certain proportion of cases not typhoid fever there occurs a delayed moderate reaction in a 1 to 10 or 1 to 20 dilution of serum or blood (the proportions originally proposed by Widal) but very rarely, if ever, excepting in typhoid fever, or at least typhoid infection, does a complete reaction occur in this dilution within five minutes. It is well to note that typhoid fever and typhoid infection are not synonymous. There may be even death from typhoid infection without intestinal lesions or the usual symptoms. When dried blood is used the slight tendency of non-typhoid blood in 1 to 10 dilution to produce agglutination is increased by the presence of the fibrinous clumps, and perhaps by other substances derived from the disintegrated blood cells. We may sum up by saying that from many hundreds of cases examined by Fraenkel, Stern, Foster, Scholtz, ourselves, and others it has been found that in dilutions of 1 to 20 or more a decided, quick reaction is never produced in any febrile disease other

than typhoid, while in typhoid fever such a distinct reaction often occurs with dilutions of 1 to 50.

The mode of procedure, therefore, as now employed is as follows: The test is first made with the typhoid bacillus in a 10 per cent. solution of serum or blood. In the case of serum, one part of serum is added to nine of the bouillon culture. With dried blood, a solution of the blood is first made, and the final dilution guessed from the color of the mixed culture and blood solution.* If there is no reaction, that is, if within five minutes no marked change is noted in the motility of the bacilli, and no considerable clumping occurs, nothing more is needed; the result is negative as far as this specimen is concerned. If complete clumping and immobilization of the bacilli occurs almost immediately this is denominated "a marked immediate typhoid reaction," and no further test is necessary, though it is often advisable to confirm the reaction with higher dilutions up to 1 to 50. If, however, upon examination of the mixture in a hanging drop there is no marked immediate reaction, but the bacilli only show an inhibition in their motility and a tendency to clump, becoming more marked within ten minutes, this is called "a probable typhoid reaction." The time allowed for the development of the reaction with the high dilutions is by many from one to two hours, but to us thirty minutes seem sufficient. Positive results obtained in this way may be taken to be conclusive unless there be grounds for suspecting that the reaction is owing to a fairly recent previous attack. The absence of reaction in one examination in no way excludes typhoid infection. If the case remains clinically doubtful, the examination should be repeated within a week.

In a large number of cases examined in the Health Department Laboratories 20 per cent. gave positive results in the severe test we use in the first week, about 60 per cent.

*To obtain the standard dilution colors certain amounts of fluid blood are dried and then mixed with definite amounts of water.

in the second week, about 80 per cent. in the third week, about 85 per cent. in the fourth week, and about 75 per cent. in the second month of the disease. In 88 per cent. of the cases in which repeated examinations were made (hospital cases) a definite typhoid reaction was present at some time during the illness. The majority of the cases examined which gave no reaction by the twenty-first day failed to give at any time a definite reaction; exceptionally, however, the reaction did not appear until the fourth week, or in the relapse. The peculiar property of resistance of reaction of the blood-serum in persons who have recovered from typhoid fever may be found for several months and occasionally to a slight extent for years.

An immediate marked reaction has never been observed in a 1 to 10 dilution of the blood-serum of over one hundred healthy persons examined in the Health Department Laboratories. In several hundred cases of disease other than typhoid fever only rarely did the serum give a marked immediate reaction in a 1 to 10 dilution, and here a complicating typhoid infection is probable, though several cases, which had so far as we could tell no typhoid infection, gave a delayed partial reaction.

THE DIAGNOSIS OF TYPHOID FEVER.—A DISCUSSION AT THE NEW YORK STATE MEDICAL ASSOCIATION OCTOBER 25, 1899.

By William Osler, M. D., Professor of Medicine, Johns Hopkins University, Baltimore.

"There is no one symptom, there are no two or three symptoms which, in themselves, are characteristic of the disease. There is no one symptom, there are no two or three symptoms, usually occurring in the disease, which may not be absent during its entire progress. Our diagnosis can never be founded here, as it is in many other instances, on a few positive, physical signs. It must always be rational, not absolute. The evidence, upon which our verdict is to be rendered, is wholly circumstantial. Notwithstanding all this, and although cases sometimes occur so enveloped in obscurity as to baffle the skill of the most careful and experienced observers, it is still true that there are few general diseases the diagnosis of which is so well established, and so certain, as that of typhoid fever."

These statements, taken from the remarkable work of Elisha Bartlett, *On Typhoid and Typhus Fevers*, 1842, express, with slight modifications, the position of the profession to-day on this all-important problem. I quote it designedly to emphasize at the outset the uncertainty which still besets us in dealing with some cases of this protean disease, notwithstanding the extraordinary advances in our clinical and bacteriological knowledge. In the time at my disposal it will be best to summarize the questions briefly in four divisions, which illustrate the conditions under which difficulty in diagnosis is experienced: First, variations in the intensity of the infection; second, the early and pro-

nounced localization of the infection; third, peculiarities in the symptoms; and fourth, certain diseases which simulate typhoid.

I. Variations in the Intensity of the Infection. (*a*) *The Mild Cases.*—Every autumn we meet with cases of illness, from five to eight or ten days' duration, sometimes longer, in which, with gastro-intestinal disturbance, indicated by a furred tongue and diarrhoea, or quite as frequently constipation, there is a fever of a slight grade. Perhaps on deep palpation the edge of the spleen may be felt. In such a case the appearance of a few rose spots may clear up the diagnosis, but in other instances the practitioner remains in doubt whether the condition is a simple continued fever or a mild typhoid infection. A relapse, with characteristic symptoms, or a well-defined post-typhoid lesion, may give the diagnosis; but most important of all is the presence or absence of the Widal reaction, which is nowhere of greater help than in this group. While it may not be present at first, even not until the fever has disappeared, it has been of very great service, and will be, I am sure, when more widely used, a special boon in these cases. The method should be employed in widespread epidemics to help in the diagnosis of the milder forms. I may remind you of the exceedingly interesting account from Professor Sahli's clinic, at Bern, of the outbreak of typhoid fever in an asylum of the canton. In addition to thirty patients who had attacks severe enough to demand hospital treatment, there were twelve who had such slight symptoms as headache, fever, and diarrhoea, lasting only a few days, and not severe enough to confine them to bed, yet the Widal reaction was characteristic. I am sure that a widespread application of the test will restrict within very narrow limits the cases of so-called simple continued fever.

(*b*) *Acute Typhoid Septicæmia.*—At the other extreme is the remarkable group in which the patients present the

evidence of an acute infection of great severity without any localizing symptoms. For a week or ten days the picture is that of a profound toxæmia, with high fever and early delirium. Death may occur before it is possible to reach a diagnosis; even the Widal reaction may not be present. A post-mortem may show the characteristic enteric lesions, but not always, and the reports of Chiari, Flexner, Hodenpyl, and others have taught us to recognize typhoid fever without intestinal localization. There are cases in which a post-mortem diagnosis is negative, and only a bacteriological study may reveal the true nature of the disease.

II. Early and Pronounced Localization of the Infection.—A majority of the cases of typhoid fever present no symptoms indicative of the special involvement of any organ or group of organs. A large proportion have no intestinal symptoms. Of thirty-five cases which have been under my care during the present month only four have had severe abdominal symptoms. The profession has had its attention too strongly directed to the enteric character of the disease; hence it not infrequently happens that we are completely taken off our guard when the brunt of a very acute infection falls upon some other system. Of these, the cerebro-spinal, the pulmonary, and the renal localizations are the most deceptive. Agonizing headache, severe neuralgia, delirium, or even furious mania may be the first symptoms of the disease. The so-called brain fever, the acute febrile mania, and cases with symptoms of cerebro-spinal meningitis are not infrequently typhoid fever, and it is important to remember that under the most favorable circumstances death may occur before a positive diagnosis is reached. A post-mortem may alone clear the obscurity, and in its absence the physician can scarcely be blamed when he returns the case to the health board under one of the above designations. Widespread bronchitis,

acute pleurisy, with friction and subsequent effusion, early consolidation of a lobe of one lung may mask the true nature of the disease. The early renal localization is almost certainly called (as it is, of course) acute nephritis, of which there may be no single feature lacking, and the suggestion of typhoid fever may be delayed for ten days or more, when enteric symptoms appear, or the fever becomes more intense, or rose spots appear.

These clinical mistakes cause no little mortification to the young practitioner, who has not yet learned to dissociate his *amour propre* and infallibility in diagnosis. Even when hardened—humbled, I should say—by repeated exposure, it is not pleasant to be deceived, and a good rule is: When in doubt, keep your mouth shut. Unless one has a Cassiolike volubility, in the flow of which the friends of the patient lose all idea of your true opinion, the gift of taciturnity should here be cultivated.

III. Peculiarities in the Symptoms.—Elisha Bartlett's dictum, with which I began this paper, must ever be borne in mind. There may be no fever (though afebrile typhoid fever is very rare; I have never seen—to recognize—a case); the onset may be abrupt; there may be no rose spots, no intestinal symptoms; the diazo reaction may be absent; the Widal test may be negative at the height of the disease; there may be leucocytosis, and yet, as Bartlett says, "there are few general diseases the diagnosis of which is so well established and so certain." It is just in these negative cases, with fever alone, that the Widal reaction and the blood count may give us the only positive data, and the practical clinical value of the former, when carefully made, can not be overestimated, and it should be more widely used by practitioners. Wyatt Johnston's method (the dried blood drop) can be utilized, and there are now in almost every State laboratories in which the test can be made. Of positive symptoms which may lead to error I have time to mention only

one—viz., chills. How often have I heard the protest, "But, doctor, the patient has had chills, repeated chills; surely he must have malaria"! At the onset of the disease, at the onset of a relapse, as a result of treatment with antipyrine and antefebrin, at the onset of complications, in the typhoid septicaemia, and in the secondary infections of protracted cases and during convalescence, chills frequently occur. Most exceptionally they are due to malaria, which in reality is the last thing to be thought of (except in cases from the tropics), and the nature of which in any given case can be determined by the blood examination and by the therapeutic test.*

IV. Typhoid Fever and Malaria.—I come now, Mr. President, to the only part of the subject worth discussing at the present moment—namely, the diagnosis of typhoid fever from certain other diseases. To gain time I pass by acute tuberculosis, which trips us at all intervals (and I may say I am feeling sore from a fall over it not ten days ago), cerebro-spinal fever, meningitis, typhus, and the other acute infections, to take up the really serious question of the diagnosis of typhoid from the malarial fevers. During fifteen years' practice in the middle region of the Atlantic coast I have had only too forcibly impressed upon me the strange readiness with which physicians diagnosticate a continued fever as malaria. In this period I do not remember to have seen in consultation, in town or country, a single instance of continued fever, diagnosticated as malaria, which did not prove to be typhoid fever. I was fully aware, perhaps few men more so, of the widespread existence of the strong delusion on this subject in the minds of the profession, but neither I nor, I think, you who listen to me now were prepared for such a remarkable exhibition of its strength as that with which the late war presented us. The paper of Dr. Vaughan, based on material collected by the commis-

*Chills in Typhoid Fever; Studies on Typhoid Fever, ii. *Johns Hopkins Hospital Reports*, vol. v.

sion appointed by Surgeon-General Sternberg to study the causes and spread of typhoid fever among the troops in the camps of the United States, has been characterized as an indictment of the general efficiency of the men in charge of the camps. A demonstration on a wholesale scale was given of the ignorance in a large number of the members of our profession of essential elementary facts concerning these two diseases. While subscribing to the indictment, I feel that the gravity of the charge is less against the physicians than against those of us who occupy teaching positions. Who are the men responsible for this widespread error? Professor Dock, of Ann Arbor, who was on duty at the camp at Chickamauga, tells us in a few words. He says: "It is not necessary for me to defend the army medical service, for what struck me at the camps was the evidence of lack of knowledge of typhoid and malarial fevers in the profession at large. I came into contact with probably from sixty to seventy-five young physicians of a very good class, such as we would take into our hospitals as internes. Most of them, however, had no hospital experience, and very few seemed to have had any clinical experience with typhoid." The fault lies in reality with the system of teaching which permitted these young men to go out into practice without a thorough knowledge of typhoid fever. Here is the kernel of the whole matter. Looseness of diagnosis is inevitable while we send out the members of our graduating classes unfamiliar, by daily routine work in the hospital wards, with the clinical features of typhoid fever. But this is not the occasion on which to dwell further upon this point, while I bring it up only to place the responsibility for an acknowledged widespread ignorance where it should rest.

I have on a recent occasion, Mr. President, paid a tribute to the notable contributions on typhoid fever which have been made by three generations of American physicians. I am sorry that I can not speak in the same warm terms of

the present generation in relation to the study of the modern problems of malarial fever. Fifteen years have passed since Dr. Sternberg's paper introduced to us in this country the brilliant work of Laveran, and in spite of the numerous confirmatory researches which have been made in Philadelphia, Baltimore, New York, and elsewhere, the enormous practical gain—namely, that we are everywhere able under all circumstances to determine the presence or absence of a malarial infection, has not been appreciated fully by the practitioner at large. One has to sympathize a bit with him—clinical fetiches are given up with difficulty and regret! To many good, easy men it came as a shock, to find that malaria was really a well-defined, easily recognizable disease. Naturally, it was hard to abandon a word like *malaria*, which carried with it as much clinical comfort as did that blessed word *Mesopotamia* spiritual unction to the old lady. My sympathies have been deeply aroused by the distress which has been felt in many quarters of this city where you have been, until recently, with some notable exceptions, heretics of the worst kind. Nowhere, perhaps, has malaria ever covered such a multitude of diverse maladies. I came in contact with it first when in Montreal, a city in which malaria is unknown, so that when our patients returned from the hands of Gotham consultants with the diagnosis of malarial neurasthenia, or of latent malarial abscess of the liver, or of malarial headache of obscure origin, we learned to appreciate the mysteries of paludic infection as existing in the imagination of Manhattan practitioners. I have myself been scolded as too shockingly dogmatic on the subject, as some of you may remember, in a paper read a year or so ago by my friend Dr. Beverley Robinson; but I protest that dogmatic as I have been, I have not been dogmatic enough. Had we teachers throughout the country been more persistently dogmatic, the profession might have been spared the mortifying exhibition of last year.

But as for so many of us, so for Dr. Robinson, there is no possible salvation in this respect until born again of the microscope and a prolonged course of study of the genuine disease.

Two clinical rules should guide practitioners above Mason and Dixon's line:

1. *An intermittent fever which resists quinine is not of malarial origin.* Infection with the tertian organism, producing quotidian or tertian paroxysms, is the only variety of malarial fever prevalent in the Northern and Middle States. This form of the parasite is peculiarly susceptible to the action of quinine, and even a grain or two daily may suffice to clear the blood within forty-eight hours. The constancy, the infallibility of the action of this drug is one of the most remarkable phenomena in medicine. Our clinical charts of simple intermittents, now numbering many hundreds, may be searched through and through without finding an instance in which the paroxysms were not checked by the use of quinine, and usually within thirty-six or forty-eight hours.

2. In these localities *a continued fever is not due to malarial infection.* I am speaking now, remember, of the regions named, in which the æstivo-autumnal organism and the graver forms of the disease caused by it are very rare. For remarkable complexity in the clinical manifestations, for variability in mode of onset, in the course, and in the symptoms, the æstivo-autumnal infection takes precedence even of typhoid fever. With a vigilance quickened by repeated surprises, we are yearly made to feel the subtleness of this protozoan Proteus, which rivals "the old sea-tell-truth" of Homer's tale in clinical wiles and sleights.

So exceptional are cases of a continuous fever with tertian infection that they need not be considered, but the æstivo-autumnal fever may simulate typhoid very closely. I shall not detain you with any detailed account of the differentia, which are fully described in recent works, but I may dwell

on one or two points. The fever in malaria from the outset is marked by remissions—hence the term remittent fever—of a grade rarely seen in typhoid until the late stages. Once the fastigium is reached, the fever in the latter presents a remarkable steadiness; the two-hour record may show for several days a variation of not more than a degree. The chart has a "Pennsylvania-Railway-like" directness, in marked distinction to the zig-zag "Baltimore-and-Ohio-Railway" chart of æstivo-autumnal fever. The early anæmia, with sallow complexion, often suggests the diagnosis, even when other symptoms are like those of typhoid fever.

It is in these cases that we find the enormous diagnostic value of Laveran's discovery. Unfortunately, the parasite of the æstivo-autumnal fevers is less easily recognized in the acute stages than the larger tertian form, and, moreover, it may be very scanty in the circulating blood. To become an expert in the examination of the malarial parasites requires a long and tedious apprenticeship, and there have been illustrated papers published in this country which make one wonder not less at the brazen audacity of the authors than at the gross ignorance of the editors of the journals. I would urge most strongly, particularly upon the young house physician beginning the study, in all doubtful cases to keep well-made cover-slip preparations, which can be identified later by proper methods of staining. The recognition of an æstivo-autumnal infection of a week or ten days' duration is an easy matter from the presence of ovoids and crescents. Unlike the simple intermittents, the malarial continued fever is more resistant to quinine, and three or four days may elapse before the temperature falls, and the organisms do not disappear from the blood so promptly; indeed, the crescents and ovoids are remarkably resistant in comparison with the tertian form.

Combined infection with the typhoid and malarial germs is excessively rare; so rare, indeed, that only a single in-

stance has been met with in the Johns Hopkins Hospital in ten years among nearly one thousand cases of typhoid fever. When it does occur, quinine readily settles the malarial side of the infection, while the typhoid fever pursues its usual course. It is to be hoped that the pernicious term typho-malarial fever has been forever banished from our nomenclature. Sheltered under it, a fancied sense of security has too often ended in a sad calamity, either to the patient or, in the absence of proper sanitary precautions, to the community.

But after all in any discussion on typhoid fever the appeal must be made to the hard-worked practitioners of the smaller towns and country districts (in which the disease is now most prevalent), who find it very hard, in the conditions of their lives, to take advantage of modern scientific methods of diagnosis. They must rely in great measure on experience and common sense, and to them I would say in conclusion—*learn to suspect typhoid fever, and not malaria, in every case of fever, of six or seven days' duration, particularly if it resists the action of quinine. For too long you have employed the Anglo-Saxon method of procedure and in a given case have assumed innocence of anything so serious as typhoid until in the onset of some serious symptom the guilt was only too evident! It is high time now that you adopt the Gallic usage, and regard every case of continued fever as guilty, that is as a typhoid, until the contrary be clearly demonstrated.*

Two recent works should be on the library table of every physician at this season of the year—Keen's *Surgical Complications* and Hare's *Medical Complications of Typhoid Fever.* They will stimulate that personal progressive education which all of us should seek—an education which carries with it, year by year, as experience widens, not alone a better knowledge of the clinical intricacies, but an ever-ripening wisdom which enables us to be more and more helpful to the pitiable victims of this disgraceful disease.

TEN YEARS' EXPERIENCE WITH TYPHOID FEVER AT THE ROOSEVELT HOSPITAL.

By W. H. Thomson, M. D., LL.D., of New York County.

The observations which I propose to make on this occasion are based exclusively on my own experience with typhoid fever for the past ten years from September 1, 1889, to September 1, 1899, in the wards of the Roosevelt Hospital during the months of my service. Those months were June, which according to the Health Board statistics correspond to the time of least prevalence of this fever in New York, and September and October, which correspond to the time of its greatest prevalence.

Owing to its gradual development and prolonged, though fairly definite course, this fever offers better opportunities than almost any other acute disease for noting whether we can modify in any way its natural progress so as to lessen its dangers or complications. In a paper read last November before the Harveian Society, Dr. Sydney Phillips, Physician to the London Fever Hospital, maintains that while typhoid fever during recent years appears to have changed its type in the lessened severity of the accompanying abdominal and nervous symptoms, yet according to English statistics the fatality from the disease has not altered, so that the chances of recovery of a person contracting typhoid fever to-day are little or no better than they were fifty years ago, notwithstanding the advances in medical knowledge, improved nursing and hygienic conditions. Murchison found that the mortality of patients in the London Fever Hospital during the ten years ending 1862 was 18.5, and Dr. Phillips says that all the figures available to him in the same Fever Hospital and other metropolitan institutions,

as well as the Registrar General's returns, show that the mortality from 1890-1897 still remained over 18 per cent.

Notwithstanding the recognition of Dr. Phillips that many of the symptoms of typhoid fever seem to be less severe at present than formerly, but as he claims without showing any improvement in the chances of recovery, I cannot but feel that a comparison of the clinical features of the cases with the picture given by medical writers thirty-five years ago, such as in the works of Watson and of Bristowe, will have some bearing upon the question whether we have made any advances in treatment, and that such a clinical comparison does offer more trustworthy data than the mere percentage of death rates.

Because if methods or measures of treatment have any influence in modifying the course of such a long continued fever as typhoid, they cannot do so at once in any stage of the disease, but rather in proportion to their being begun early in its course. Now it happens that hospital experience is often imperfect in this very particular, because only a minority of the patients are admitted at the inception of the fever, while most not until it is well advanced into the second week, and very many not until they have been twenty-one days sick. The effect of this fact upon the death rate itself is shown in my own experience as follows:

The whole number of typhoid fever patients treated by me at the Roosevelt Hospital from September, 1889, to September, 1899, was 368; males, 275, females, 93. Whole number of deaths 25 or 6.8 per cent. Of these 19 were males and 6 females. Of those who died however, 56 per cent., 8 males and 6 females, 14 in all, died within a week after admission. How far they were advanced may be judged from the fact that the average duration of the fever before admission for the whole 368 was 9.43 days. Many who died in the first week were in a hopeless state if not actually moribund on their reception. Among the 93 females there

were no deaths after the first week following their admission, that is in 87 of the 93. If therefore we count only those who died after a week or more of hospital treatment, they number 11, or only 3 per cent. As the London Hospitals presumably report their entire death rate, our figures of 6.8 per cent. is to offset 18 per cent. in London.

But, as already remarked, the proportion of occurrence of the leading symptoms characteristic of this disease and their severity, as far as they can be derived from the clinical histories, furnish a much better criterion of the efficacy, or the reverse of any methods of treatment than the mere percentage of deaths or of recoveries. Following therefore Bristowe's enumeration of symptoms we will first note the diarrhoea. He speaks of it as generally associated with the initial symptoms though sometimes absent there, to become a striking feature of the disease and rarely absent from the second week on. He deprecates on this account the use of laxatives, unless perhaps a small dose of rhubarb or of castor oil during the first week, and he regards the recommendations of Trousseau and of Geo. Johnson that the diarrhoea should be allowed to run its course as erroneous and dangerous, preferring to check it by the systematic administration of tannic acid, sulphuric acid, lead and opium, etc.

In my own records, diarrhoea occurring after the first week following admission is reported in only 32 out of the 368, or 8.7 per cent., and in the majority of them it was not severe, so that there are very few prescriptions recorded as administered for this symptom. On the contrary constipation which had to be relieved by enemata was of very frequent occurrence, but the percentage unfortunately has not been made out. The absence of diarrhoea in typhoid fever is not confined to my hospital experience, but has been reported of later years as common in American hospitals generally, and is noted, though to a less extent, in the English

reports. I would ascribe this change in large measure to a change in the feeding of fever patients. Thirty years ago the use of beef tea in typhoid fever was almost universal. I believe that hardly any articles are so prone to fermentation in the alimentary canal, and to induce tympanites as the continuous administration, day and night of meat broths in febrile conditions.

Thirty years ago tympanites was so constant a symptom that it was rated as a diagnostic feature of the disease. As Watson says, "if you make pressure on the abdomen you will find it unnaturally hard and resisting, as though its walls were much distended; but whether large or not, Dr. Jenner states that its shape is invariably the same and peculiar. The patient is never pot bellied but tub shaped."

As I have always placed a good deal of store upon this symptom, I have had its occurrence noted in every case, so that even its temporary presence might not be overlooked. According to my recollection so infrequently had it been a marked symptom in any but the fatal cases, that I was surprised to find it had been recorded as present in 84 patients, or 20.2 per cent. On reviewing this record, however, it was found that nearly one-half the whole number of instances of tympanites occurred in September and October, 1898, and was noted in 39 soldiers admitted for typhoid fever contracted at various camps in our own country and in Cuba. Of these, six had malaria, in four of whom the plasmodium malaria permanently disappeared after the typhoid fever ran its course, while in two others chills and fever, with a reappearance of the plasmodium, took place after they had fairly convalesced from typhoid. It was probably owing to the reduced constitutional condition of these soldiers from the poor food and other hardships of camp life that they so generally presented this symptom on admission. Deducting therefore these soldiers, the occurrence of tympanites at all is recorded at most in only about 45 patients or about 11 per

cent. Its presence is generally in the records of those who were admitted late in the disease, and in a majority of these it disappeared soon afterwards under treatment. The prevention of this particular symptom I believe to be not without bearing upon our question whether we can favorably modify the course of the fever, for tympanites is both a sign and a complication. It is a sign of weakened innervation and of loss of normal antiseptic power in the gastro intestinal secretions on the one hand, and a divert cause of cardiac and of pulmonary enfeeblement on the other, while it cannot be without some effect in increasing the tendency to accidents at the seats of intestinal ulceration. I always regard a persistent tympanites in a typhoid patient with uneasiness, and any method of treatment in which this symptom becomes a rarity I cannot but consider as materially beneficial. The number of patients in whom hemorrhage from the bowels occurred was 27, or 7.3 per cent. In no instance was it directly fatal.

Among the 19 deaths of male patients, four succumbed to intestinal perforation. Two of those occurred among the soldiers admitted in 1898 and while they were convalescing. It was noteworthy that both had refused to enter their camp hospitals for a number of days after they were ill with the fever and they continued to report for marching duty when they should have been in bed. In both of them laparotomy was performed by my colleague Dr. Robert Abbe as soon as possible after they showed symptoms of this accident, but to no avail, one dying the day of the operation, while the other survived it five days.

To continue our comparison with the English experience, Dr. Bristowe proceeds to describe "the typhoid condition" into which he states, a large proportion of the cases pass in the second week. "The elevation of temperature continues, the rash still comes out, the diarrhoea still persists; the tongue becomes dry and brown and traversed by deep fis-

sures; the lips and teeth covered with sordes; the mind grows dull and apathetic; and delirium, sometimes violent, sometimes busy, sometimes muttering, supervenes; bedsores tend to form; tremors, subsultus and involuntary passage of the evacuations takes place," etc.

I may say that as a whole this picture is one of great rarity in my experience. Thus as to delirium, it was noted in 47, or 12.7 per cent. But of these 15, or 32 per cent., were delirious on admission, four of whom died within that week while the rest recovered from their delirium in a week or less. The total absence of delirium in the remaining 321 patients, or 87.3 per cent. of the whole number, is at least an indication that they hardly passed into the typhoid condition pictured above at any time in the course of the disease. Some of them were drowsy, but tremors and subsultus were too rarely observed to figure among the clinical symptoms. The state of the tongue was always carefully noted, but fissure is not once recorded. Sordes on the lips and teeth were present in patients on admission, but in every case soon cleared up and is never recorded as developing in patients after admission. Of this fact I feel quite sure, for it has seemed to me that a remedy soon to be mentioned is commonly quite efficacious in preventing general dryness of the tongue if administered at the first appearance of this symptom at the tip.

Of other complications in our series, pneumonia occurred in 10 or 2.7 per cent. Bronchitis in 29 or nearly 8 per cent., but it was an initial symptom in more than 40 per cent. of them and was easily controlled.

Peripheral neuritis occurred in 24, or not quite 7 per cent. of the cases, and in each case was limited to the feet. The causation of this symptom in typhoid is apparently purely mechanical from the foot-drop induced by prolonged relaxation of the leg muscles. The peripheral neuritis of phthisis

is probably partly, though not wholly due to the same condition.

Phlebitis occurred in 7. In two of them it was very troublesome and much prolonged the convalescence.

Subcutaneous abscesses occurred in 29, or nearly 8 per cent. This large number, however, for such a complication, occurred mainly in the form of a furuncular epidemic in the autumn of 1894 and 1895 in patients who took a large number of baths, while they rarely appeared in those who took but few baths. I learned that during those years a similar experience was encountered in other hospitals in this city, and I myself had the same proportion of such cases in the typhoid fever patients in my wards at the Bellevue Hospital. I ascribed it then to the presence of an infectious organism in the Croton water. It constituted a serious complication, greatly retarding recovery, and in two cases seemed to contribute to a fatal result.

Relapses occurred in 55, or in no less than 15 per cent. of all the cases. Though some of them seemed to occur in close sequence to some imprudence in eating articles surreptitiously furnished by friends during the hungry period of beginning convalescence, yet in most instances no such cause could be assigned. Moreover the tendency to relapses is much more marked in some years than in others, rising as high as 30 per cent. of all cases in one year, so that the etiology of these recrudescences of this fever must be regarded as obscure. In London also it is noted that the 3 per cent. of relapses given by Murchison has now risen to 13 per cent. As a rule the prognosis is not unfavorable except in those cases which begin the relapse with vomiting.

In one of the fatal cases (male) typhoid ulcers were found only in the large intestine, where they were very numerous. One case, a man at forty, five years ago, ran through a course of typical typhoid fever clinically, but after he had so

far convalesced as to be allowed solid food he developed an abdominal pain and fever of a septic type and died in ten days. At the autopsy extensive pelvic myositis was found, but no evidence of any antecedent ulceration in the intestine or in the appendix was discernible. I greatly regret that no cultures were made from the pelvic exudate, for I have no doubt that his was a case of typhoid fever without implication of Peyer's Patches.

My method of treatment of typhoid fever has been as follows: On admission, if at any time before the end of the second week, a mercurial purge of five grains of calomel and thirty-five grains of compound jalap powder is administered, and this purgative is repeated every third night until the close of the second week. The presence of diarrhoea is no contraindication to its administration, for it seems rather to check it altogether and to change the character of the movements in the majority of cases. It seems directly to lower the temperature as its first effect and to moisten the tongue. My belief is decided that a mercurial cathartic acts as an effective gastro-intestinal antiseptic and lessons the toxaemia. In many cases I have continued it well into the third week, ceasing its administration only when there was cause to fear the supervention of intestinal hemorrhage.

The exclusive diet until the fourth week is equal parts of milk and lime water. Such a dilution of the milk I think is imperative, for the majority of even healthy adults cannot take large quantities of fresh milk continuously without inducing digestive disturbances, as is proven on a large scale by the invariable practice of all pastoral peoples who have to live largely on milk, of fermenting the milk first so as to spare the stomach the preliminary task of curdling it. I prefer lime water as the diluent on account of its decided antiseptic properties. In the fourth week, farinaceous gruels, preferably arrow root, is added.

As typhoid fever has been shown to reduce the peptic secretions of the stomach more than any known disease, not excepting gastric cancer, I see no reason why we should not attempt to supplement the deficiency by administering pepsin. The theoretical objections adduced by some physiologists to pepsin preparations as being both insufficient and inert I reject altogether. In typhoid fever the stomach is reduced in digestive power to the weakness of early infancy, hence I would not give milk undiluted. But practically I have repeatedly seen, especially in consultation practice, gastric tympany speedily subside on the administration of pepsin. From the beginning to the end of the fever, ten grains of pepsin and ten of bismuth subcarbonate is ordered by me every three hours, so as to amount to eighty grains of each in the twenty-four hours. In many cases the dose of bismuth is twenty grains. Bismuth I regard as much our most serviceable intestinal antiseptic, and experience only leads me to increasing rather than to decreasing doses of it. With this medicinal management of the alimentary canal not only is dry tongue, stomatitis, pharyngitis, parotitis, otitis (I have never had a case of typhoid ulceration of the larynx in my wards) and diarrhoea notable by their absence, but the emaciation of this fever is equally prevented, in marked contrast to what I have witnessed in patients who had been otherwise treated. As soon as the tip of the tongue shows the first sign of dryness, 10 to 20 minims of Spts. terebinthinæ are given every four hours in emulsion.

This constitutes the stated medication of the case; signs of circulatory weakness are met as they arise by the ordinary resource to alcoholic and other cardiac stimulants, with the exception of digitalis. To check intestinal hemorrhage, a quarter of a grain of silver nitrate and a quarter of a grain of opium are enveloped, so to speak, in nine grains of resin of turpentine in three pills and this dose is given every two

to four hours. These pills are so slowly dissolved in the intestine that some may pass unacted upon, in which case five minims of liq. kali should be added.

Against the general toxaemia of typhoid fever there is in my opinion no measure which approaches the cold bath. I have had resource to it in every case of typhoid fever under my treatment since the year 1874, and I order the patients to be put at once into the tub as soon as the temperature reaches 103° F. Active friction of the whole body is kept up by the attendants while the patient is in the water, and a drachm of Hoffman's Anodyne in camphor water is given as soon as he is taken out to shorten the subsequent shivering. In some weak patients this is also given before the bath. I think that the observation, now fully confirmed, that the cold bath doubles the toxicity of the urine, points to the eliminative action of this measure as a more likely explanation of its life saving efficacy than its mere antipyretic effect. During my service in 1898, I had every other patient given their baths charged with the artificial Nauheim salts and carbonic acid furnished by the Triton Co. of New York. In comparison with patients treated with ordinary cold water, the depression following the Nauheim baths was undoubtedly less, while the antipyretic effect was more prolonged, probably from the general cutaneous stimulation of the salts and carbonic acid. On that account I have since freely recommended this modification in consulting practice.

Owing to my routine practice now of treating every case of nephritis with oliguria by rectal irrigations of 4-6 gallons of normal saline solution, administered by Kemp's rectal irrigator, this measure is always adopted at the hospital in every case of typhoid fever with albuminuria, but I would recommend it also in all cases of this fever with severe toxic symptoms on account of its effect in promoting renal eliminations.

TYPHOID FEVER AT THE MASSACHUSETTS GENERAL HOSPITAL DURING THE PAST SEVENTY-EIGHT YEARS. MORTALITY; INTESTINAL HAEMORRHAGE; PERFORATION; RELAPSE.

By Reginald H. Fitz, M. D., of Boston.

The recognition in this country of typhoid fever as an independent disease and its identification with the typhoid fever of Paris were the outcome of investigations carried on at the Pennsylvania Hospital in Philadelphia and at the Massachusetts General Hospital in Boston. The discoveries in the first quarter of this century of the French pathologists, above all, of Louis, received but little attention from the American physicians of that period. In fact, the observations on typhoid fever of this eminent physician were known to James Jackson, Professor of the Theory and Practice of Physic in Harvard University, only through a review in the Edinburgh Medical and Surgical Journal for 1830, until the return from Paris, three years later, of his son James Jackson, Jr. This gifted young physician, in the words of Dr. Osler, "the young Marcellus among the physicians of the country," between 1831 and 1833 was a fellow-student in Paris of William W. Gerhard, and Casper W. Pennock, both of Philadelphia. These young men became devoted followers and admirers of Louis. Jackson, in particular, came into such intimate personal relations with him as to look upon him as a second father. Louis has placed on record the warmth of his friendship for the younger Jackson and his thorough appreciation of his exceptional talent for the observation of disease. Dr. Gerhard, soon after his

return to Philadelphia in 1833, received the appointment of resident physician in the Pennsylvania Hospital, occupying this subordinate position for the purpose of devoting himself for a while to medical research. The results of his investigations in typhoid fever were published in the following year (Am. J. M. Sci. 1834, XV 32). James Jackson, Jr., within two weeks after his return from Paris, closely studied the cases of disease in the Massachusetts General Hospital both in the wards and in the autopsy-room until he was taken sick with typhoid fever. Soon after recovery from this disease he died of dysentery, early in 1834, just as he was about to begin the practice of medicine in Boston. Although his opportunity of active research at the hospital was limited to a few weeks only, his influence seems to have been the most powerful factor in bringing about, both in the hospital and in New England, the more exact knowledge of the nature of typhoid fever. Until his return the examination of the intestines in this disease was not properly conducted; indeed they were most frequently left unopened. Within six weeks after his investigations were begun the evidence obtained with regard to typhoid fever was strongly corroborative of the observations of Louis. "He found that this disease exhibited in the living and in the dead the same characters which his master had so accurately delineated." (Memoir of James Jackson, Jr., M. D., 1835, p. 40.)

The names of two other Bostonians, Drs. Bowditch and Shattuck, also pupils of Louis, and who eventually became physicians to the Massachusetts General Hospital, were likewise intimately connected with the early history of typhoid fever. Henry I. Bowditch in 1832 was a fellow student in Paris of the younger Jackson and shared in his enthusiastic admiration for Louis. He translated the Recherches Anatomiques of this author (Anatomical, Pathological, and Therapeutic Researches on Gastro-enterite, Putrid, Adynamic, Ataxic or Typhoid Fever. By P. Ch. A. Louis. Translated

by Henry I. Bowditch, M. D., Vols. 2, 1836) and thus in 1836 opened to most of the practitioners of the United States and of the British Kingdom what, hitherto, had been a sealed book. George C. Shattuck, Jr., was sent to England by Louis in 1838 to observe the cases of continued fever in that country, all of which were then regarded as the one affection, typhus, with the view of determining to what extent they resembled and differed from those occurring in Paris. He found examples of both typhus and of typhoid fever and reported that the latter disease in England was identical with the one observed by Louis in France. His investigations were communicated to the Society for Medical Observation in Paris and were published subsequently in Philadelphia. (Med. Exam., 1840, III 133.)

The influence of James Jackson, Jr.'s work at the hospital was first made evident in June, 1838, when his father presented to the Massachusetts Medical Society "A Report founded on the Cases of Typhoid Fever, or the Common Continued Fever of New England," which occurred in the Massachusetts General Hospital, from the Opening of that Institution in September, 1821, to the end of 1835. (Med. Communicat. Mass. M. Soc. 1841, VI 79.) The number of cases serving as the basis of this report was 303, but reference to the records of the hospital during this period shows that they were entered as *typhus*, *enecia*, *enecia typhus*, *enecia synochus* and *enecia cauma*. These diagnoses at some later period were overwritten by the term typhoid fever. Dr. Jackson, in the paper now under consideration, was led, "after much hesitation" to use the term typhoid fever through the influence of Dr. Gerhard, although he had recognized in 1833 the identity of the continued fever of Boston with that described by Louis.

During the earlier part of the period covered by the report Dr. Jackson thought that in most cases the early use of active remedies, especially of antimony, would diminish

the violence of the fever and, in many instances, would arrest it. (Memoir, p. 41.) In almost all the patients, therefore, "vomiting or full purging or both, were induced by medicine, in the first or second week of the disease." (Report, p. 91.) After 1831 emetics were used much less frequently although but few patients were allowed to go without a cathartic, and between 1833 and 1835 cathartics were not used as often after the first day in a large proportion of the cases. Mercurials, almost exclusively calomel, were employed during the first or second week until the mouth was made sore, but after 1830 their use almost entirely ceased. In 1833, however, doubts arose, especially in the mind of one of his colleagues, as to the benefit of any continued active treatment. Notwithstanding these doubts Dr. Jackson, from 1833 to 1835, during the first week of the disease usually prescribed tartar emetic every two hours in constantly increasing quantity, until it was ascertained how large a dose the patient could bear. It was found that from one-half a grain to four grains could be taken without any important effect upon the stomach or bowels. Bleeding was used in one-fifth of the cases, not as a remedy for the disease, but always with reference to particular symptoms, and opium was given to check diarrhoea and cough, to procure sleep and to alleviate pain.

Dr. Jackson concluded, apparently by deduction according to the numerical method of Louis, that at the onset of typhoid fever the patient should receive an enema, followed by a cathartic, or the two should be given in combination. If the vomiting and purging were not followed by great relief venesection was to be practiced on the following day unless the patient's constitution was very feeble or the attack mild. If the disease did not subside after the evacuations, tartar emetic was to be given every two hours in increasing doses, the bowels being kept open in the meantime. It was advised that calomel should enter into the

medicines used for this purpose. Evacuations, at least vomiting and purging, might be resorted to in the second week, and some benefit might be obtained if the use of small doses of antimony was begun in this week. After the second week no active treatment was to be employed, at all events none which would cause any serious inconvenience to the patient. As a result of Dr. Jackson's experience, but not demonstrable by the numerical method, was his adherence to the mildest articles of liquid diet until the patient was "fully reinstated." Then extra food was allowed cautiously, the caution being the more necessary the earlier the return of the appetite. At a late stage of the disease, when greatly enfeebled, vinous liquors might be tried if desired by the patient.

In the following year, 1839, Enoch Hale, attending physician of the hospital, also addressed the Massachusetts Medical Society on the subject of typhoid fever: Remarks on the Pathology of the Typhoid Fever of New England; as exhibited in its Physical Signs, and its Anatomical Appearances. (Med. Communicat. M. Med. Soc., 1841, VI 183.) His paper was based chiefly upon his experience at the hospital from October, 1833 to 1839, during which years 197 cases had been admitted. The former date was selected since it represented the time at which especial attention began to be directed to the study of the symptoms and lesions of this affection. He stated that the knowledge of the disease of Peyer's glands in typhoid fever "serves to guard us especially against inappropriate, irritating medicines, such as were formerly in use, in the expectation of arresting the progress of the fever * * * Up to a very recent period, if it be not so in some places even now, it was a common practice to give not only antimonials, but irritating cathartics, not only occasionally to evacuate the intestines, but daily, and several times a day, to 'break up' or arrest the progress of the disease, or to cure diarrhoea by removing

the supposed cause of irritation." (loc. cit. p. 253.) Hence "the necessity of a mild and unstimulating diet, during convalescence as well as during the more active period of the disease," and "most important * * * to abstain from attempting too much by active treatment. * * * Violent, persevering efforts to arrest the disease, after it has fairly begun its course, cannot be successful. They may do much harm by increasing the irritation and inflammation; but it is scarcely possible that they can do good. We may allay the general irritability of the system, we may watch against the attack of unfavorable symptoms, we may soothe the irritated state of the intestinal canal, and, sometimes, perhaps moderate the severity of its local inflammation; and thus contribute greatly both to the comfort and the restoration of our patient. In the beginning of disease, before the process of inflammation is fully established, we may, perhaps, do more, and by early removing the causes of irritation, prevent its formation, and cut short its course. It is only then that active remedies can be used with benefit, or even with safety. If persevered in at a later period, they may exhaust the patient, but they will not subdue the disease." (loc. cit. p. 255.)

During the past sixty years the treatment of typhoid fever at the hospital has not varied materially from the plan pursued by Dr. Hale and his colleagues. For the purpose of more exact information with regard to the modifications in carrying out this plan and their results, my former assistant, Dr. Louis W. Gilbert, has undertaken the laborious task of examining the original records. He has prepared the accompanying table which shows the mortality in successive years and the frequency of intestinal haemorrhage, perforation and relapse. The results of this investigation are presented for your consideration.

YEAR.	No. of cases.	Deaths.	Per cent. Mortality.	Hemorrhage.	Per cent.	Perforation.	Per cent.	Relapse.	Per cent.
1821									
1822	1								
1823	5								
1824	15	3	20						
1825	18	2	11.1						
1826	26	3	11.5						
1827	19	3	15.7						
1828	22	2	9						
	106	13	12.2						
1829	25	1	4						
1830	14	4	28.5						
1831	29	2	6.8						
1832	23	4	17.3						
1833	37	6	16.2						
1834	34	6	17.6						
1835	35	6	17.1						
1836	59	6	10.1						
1837	29								
1838	20	1	5						
	305	36	11.8						
1839	33	4	8.3						
1840	40	7	17.5	1	2.5				
1841	11	1	9.1						
1842	15	1	6.6						
1843	15	4	26.6						
1844	38	7	18.4						
1845	36	4	11.1						
1846	29	1	3.4						
1847	90	5	5.5	2	2.2				
1848	53	6	11.3						
	360	40	11.1	3	.8				
1849	36	5	13.9	2	5.5				
1850	32	5	15.6						
1851	37	7	18.9	3	8.1				
1852	31	6	19.3						
1853	32	5	15.6	2	6.2				
1854	32	4	12.5	1	3.1	1	3.1		
1855	36	1	2.8						
1856	22	3	13.6						
1857	33	9	27.2	1	3.3				
1858	27	6	22.2	1	.7	1	3.7		
	318	51	16	10	3.1	2	.6		
1859	55	5	9	1	1.9				
1860	28	4	14.3	1	3.5				
1861	41	4	9.7						
1862	19	4	21.5	1	5.2				
1863	42	9	21.4	3	7.1				
1864	33	3	9	1	3.3				
1865	24	6	25						
1866	23	2	8.7						
1867	16	3	18.9			1	6.2		
1868	20	8	40						
	301	48	15.9	7	2.3	1	.3		

YEAR	No. of cases.	Deaths	Per cent. Mortality.	Hemorrhage.	Per cent.	Perforation.	Per cent.	Relapse.	Per cent.
1869	31	4	12.9	.....	.....	.....	.....	1	3.2
1870	50	7	14	1	2	.....	.....	3	6
1871	41	13	31.7	2	4.8	2	4.8	.....	.....
1872	45	5	11.1	1	2.2	1	2.2	2	4.4
1873	37	9	24.3	1	2.7	.....	.....	2	5.4
1874	27	3	11.1	1	3.7	.....	.....	2	7.4
1875	46	5	10.9	1	2.2	.....	.....	6	13.2
1876	39	6	15.4	4	10.2	1	2.5	6	15.4
1877	23	1	4.2	1	4.2	.....	.....	4	16.8
1878	16	5	31.2	.....	.....	.....	.....	5	31.2
	355	59	16.6	12	3.4	4	1.1	31	8.7
1879	23	5	21.7	1	4.3	.....	.....	1	4.3
1880	52	4	7.7	2	3.8	.....	.....	7	13 4
1881	75	17	22.7	2	2.4	.....	.....	9	12
1882	56	10	17.8	5	8.9	.....	.....	4	7.1
1883	63	13	20.1	4	6.3	1	1.5	8	12.7
1884	74	17	22.9	4	5.4	.....	.....	14	18.9
1885	90	12	14.2	3	3.3	.....	.....	10	11.1
1886	84	12	14.3	2	2.3	1	1.1	16	25
1887	161	20	12.3	6	3.7	.....	.....	23	14.3
1888	115	17	14.7	11	9.5	1	1.1	16	13.9
	793	127	16	40	5.	3	.3	108	13.6
1889	119	13	10.9	11	9.1	4	3.3	17	14.2
1890	68	6	8.8	6	8.8	.....	.....	8	11,7
1891	98	16	16.3	8	8.1	2	2	8	8.1
1892	92	13	14.1	5	5.4	.....	.....	7	7.6
1893	81	9	11.1	4	4.9	2	2.4	9	11.1
1894	89	16	17.9	14	15.9	4	4.4	8	6.9
1895	88	16	18.1	12	13.6	1	1.1	10	11.4
1896	120	13	10.8	7	10.8	1	1.5	23	19.1
1897	86	11	12.8	11	12.8	2	2.3	4	4.6
1898	159	22	13.2	12	7.5	.....	.....	19	11.9
	1,000	135	13.5	90	9	16	1.6	113	11.3
1821–1898	3,538	509	14.3	.....	.....	.....	.....	.....	.....

For this period of sixty years but one volume of the clinical records of the medical cases is missing, namely, vol. 301, covering a part of the year 1871. The number of patients with typhoid fever assigned to this year, therefore, is probably somewhat smaller than was actually the fact, and the data obtained for 1871 are less valuable for purposes of comparison than would have been the case were the missing volume at hand. The table includes only those cases of typhoid fever which were treated in the hospital for a longer period than two days. Convalescents from typhoid fever, admitted for the purpose of recovery from the effects of the disease, are not entered in the lists. With

these exceptions the total number of patients included is 3,127 from 1839 to 1899, and 3,538 from the admission of the first patient in 1821 to the year 1899. The average mortality for the seventy-eight years from the opening of the hospital is 14.3 per cent. and for the past sixty years it is 14.7 per cent. The percentage of mortality in successive decades does not differ widely from the above figures as appears from the following statement:

Decade.	Mortality per cent.
1839 to 1849	11.1
1849 to 1859	16.0
1859 to 1869	15.9
1869 to 1879	16.6
1879 to 1889	14.7
1889 to 1899	13.5

The years of low mortality were 1837, no deaths; 1855, 2.8 per cent.; 1846, 3.4 per cent., and 1877, 4.2 per cent. On the other hand, years of unusually high mortality were 1843, 26.6 per cent.; 1857, 27.2 per cent.; 1878, 31.2 per cent., and 1868, 40 per cent. That these variations were independent of any sudden changes in treatment will appear from contrasting them with the mortality in contiguous years. Although in 1855 the mortality was only 2.8 per cent., in 1854 it was 12.5 per cent., and in 1856 it was 13.6 per cent., while in 1857 it was 27.2 per cent. In 1877 the mortality was 4.2 per cent. and in 1878 it was 31.2 per cent. The highest mortality in any one year was 40 per cent. in 1868, but in 1867 it was 18.9 per cent., and in 1869 it was 12.9 per cent.

Such variations in mortality and an appreciable prolongation of the period of convalescence led Dr. Jackson in 1838 to question whether the increased mortality and the prolonged convalescence during the period of radical changes in treatment from 1833 to 1835 inclusive, were due to the

greater severity of the disease or to the less active treatment during this period. (Report, p. 111.) It would appear from his concluding advice (p. 5) that he preferred to return to the more active treatment to which he had long been accustomed than to recommend the blander methods preferred by some of his colleagues and of which he had made a trial for a number of years. Dr. Hale (loc. cit. p. 254), on the contrary, in the following year, answered Dr. Jackson's query by stating that during the three years subsequent to the period included in Dr. Jackson's report the treatment was perhaps even milder than ever before. Although the mortality from 1833 to 1835 inclusive was from 16 to 17 per cent., it fell to 10 per cent. in 1836. In 1837 there were no deaths, in 1838 the mortality was 5 per cent., and the average mortality for the three years was in the vicinity of 6 per cent. The higher mortality of the earlier years was attributed, therefore, by Dr. Hale to the difference in the severity of the disease at different periods.

Although the study of the mortality-table makes it doubtful if modifications of treatment carried on at the hospital have produced any essential change in the death-rate, it is desirable to consider this question from the other side and inquire what changes, if any, have followed alterations of treatment. For the thirty years after the publication of Dr. Hale's paper, namely, from 1839 to 1869, the diet of the patients was liquid, the fluids often containing some farinaceous ingredient. From 1869 to 1879 beef-tea and beef-juice were largely used, in addition to the milk, and from 1879 to 1899 the liquid portion of the diet has been chiefly milk. Between 1893 and 1898 the patients under the care of Dr. F. C. Shattuck have received in addition to the milk, minced meat, raw and soft-boiled eggs, macaroni, soft crackers, toast and puddings. Patients under the care of Dr. E. G. Cutler during a like period have been fed on skim-milk, butter-milk, eggs and milk, albumin water,

chicken-broth and beef-juice with barley-water. The mixed foods were so strained as to be freed from solid particles.

During the thirty years of liquid, farinaceous diet, the average mortality was 14.1 per cent. In the milk and beef-tea decade it was 16.6 per cent., although in the immediately preceding liquid, farinaceous decade it was 15.9 per cent. From 1879 to 1899, among those patients using milk as the principal article of food the mortality was 14.6 per cent., which was about the same as during the period of liquid, farinaceous diet. The mortality was only 11.3 per cent., however, among the patients between 1893 and 1898 who were fed upon the liquid and soft-solid diet prescribed by Dr. Shattuck. This mortality compares very favorably with that of 15.1 per cent. noted among the patients using a largely milk diet, and with the 16.6 per cent. mortality occurring among patients taking strained, starchy and proteid fluids.

Since 1839 emetics and purgatives have no longer been in use and antimony has been discontinued. Calomel has been employed only occasionally in the decade following 1838, and again in 1887, when ten grains of calomel were given as a matter of routine to about one-half of the patients when they entered the hospital. The treatment in general use consisted of an alkaline fever-mixture, mild laxatives or chalk-mixture and laudanum as the condition of the bowels might demand. After 1868 rectal enemata instead of laxatives by the mouth were used when a movement of the bowels was desired. In 1878 quinine and other antipyretic drugs were added to or substituted for the alkaline fever-mixtures and were used with greater or less frequency during the subsequent ten years. The external use of water in the treatment was begun in 1873. At first some of the patients were sponged with tepid water two or four times daily. From 1878 to 1888, however, the frequency of the sponging was increased to six or eight times a day and the

temperature of the water was often as low as 65° F. Since 1888 sponge-baths and tub-baths, at a temperature of 65° F. and upwards, has been in constant use as often as every four hours when the temperature of the patient was 102.5° F. As the average mortality from 1878 to 1888 was 16 per cent. and that from 1888 to 1898 was 13.5 per cent., it is evident that a definite lowering of the rate has taken place during this period of cold water treatment. It does not follow, however, that this change for the better was due to the use of cold water, since a lowering of the mortality of even 5 per cent. in successive decades took place between 1839 and 1859, wholly independent of any obvious modification of treatment.

It remains to be learned whether the external use of cold water and the changes in diet have been attended with variations in the occurrence of such complications of typhoid fever as intestinal haemorrhage, perforation and relapse. In the earlier years of the hospital, patients with typhoid fever were allowed to walk to the closets for the purpose of emptying the bowels; hence, presumably, the occurrence of haemorrhage from the intestine was often overlooked. Notwithstanding this fact Dr. Jackson (Report p. 117) notes 10 per cent. of haemorrhage from the bowels in his series of 303 cases. From 1849 to 1899 the occurrence of intestinal haemorrhage is recorded in 159 out of 2,767 patients, a ratio of 5.7 per cent. The extremes in the decades here included are 2.3 per cent. from 1859 to 1869 and 9 per cent. from 1889 to 1899. The table shows that during the last twenty years and especially during the past ten years haemorrhage from the bowels has been much more frequent than during the previous twenty years. Indeed the average occurrence has been nearly as high in the past ten years as during the days of emetics and the active use of purgatives. That this is not a question of consistence of food appears probable from the study of the records be-

tween 1893 and 1899. In this period the frequency of intestinal haemorrhage among patients living chiefly on a milk diet was 10.6 per cent.; among those fed upon strained, proteid and amylaceous fluids it was 16 per cent., while it was only 9 per cent. among the patients living upon fluids and soft solids. The inference from this comparison is that a diet of soft solids not only does not provoke an intestinal haemorrhage, but also rather lessens the tendency to this complication. On the other hand, the strained, mixed diet may increase somewhat the frequency of haemorrhage.

In like manner the question of perforation of the intestine has been investigated. The difficulties in the way of determining the occurrence of this complication of typhoid fever are obvious to all physicians. Its presence is suggested by the onset of symptoms of peritonitis and is made apparent by the discovery of the perforation after a laparotomy or at a post-mortem examination. The symptoms of perforation may exist, however, and no perforation be found at a laparotomy or after death. Perforation, indeed, may have taken place and no characteristic symptoms have announced its occurrence. Bearing in mind these difficulties all the cases of suspected perforation have carefully been scrutinized and those instances only admitted to the table in which the perforation was demonstrated, or the clinical evidence was of the strongest possible nature. It is only within the past thirty years that the data were considered sufficient to permit comparisons to be made. From 1869 to 1879 the average frequency of perforations was 1.1 per cent., from 1879 to 1889 it was .3 per cent. and from 1889 to 1899 it was 1.6 per cent. These differences are so slight as to make it doubtful if diet or treatment have had any effect in modifying the tendency to this grave complication of typhoid fever. Of ten patients with perforation between 1893 and 1897, five, or 2.8 per cent, were using a largely milk diet, two, or 1.8 per cent., the strained, liquid diet and

three, or 3.4 per cent., were fed upon the liquid and soft-solid diet.

Any accurate observation concerning the frequency of relapse has been made trustworthy only since the introduction of the thermometer in the study of disease. Careful thermometric records have been made at the hospital since 1869. From 1869 to 1879 the average frequency of relapse was 8.7 per cent; from 1879 to 1889 it was 13.6 per cent., and from 1889 to 1899 it was 11.3 per cent. The average for the thirty years is 11.2 per cent. It may be that the increased frequency during the past twenty years is due largely, as has frequently been maintained, to the hydriatric treatment of the disease. The possible influence of diet has also been considered. Under the largely milk diet the ratio of relapse was 13.1 per cent. It was 11.1 per cent. among patients living upon the strained, proteid and amylaceous diet and 10.2 per cent. among the patients fed on fluids and soft solids. Relapses thus were rather more frequent among patients living upon a largely milk diet.

The conclusions reached from this study of the records of the Massachusetts General Hospital for the past seventy-eight years are as follows:

First. The treatment of typhoid fever does not differ in essentials from the principles laid down in 1839.

Second. The average mortality from this disease has not materially changed from the days of active treatment with emetics, purgatives, venesection, antimony and calomel down to the present time.

Third. Intestinal haemorrhage, perforation and relapse upon the whole, are quite as frequent now as at any period in the history of the disease.

Fourth. A considerable variety in diet may be permitted not only without detriment, but also with possible benefit to the patient.

TYPHOID FEVER AS SEEN IN BELLEVUE HOSPITAL.

By A. Alexander Smith, M. D., of New York county.

In a charity hospital like Bellevue, the patients whom we see come largely from the lower walks of life. A small minority, perhaps, have been in better social conditions than going to such a hospital would imply, but who may have been unfortunate. While, as has been often observed, the most of the cases of typhoid fever at Bellevue come during the months of August, September and October, there are years in which one or more patients suffering with typhoid fever may be found in every month.

It is always our endeavor to trace, as far as possible, the etiology of every case. This can be done with very little difficulty in the majority of instances, either from the patient himself or from his friends. We are always interested to ascertain if possible if the patient has contracted his illness in the city. In a pretty large proportion of cases we can get a history that the patient has been out of the city for a longer or shorter time, within a comparatively recent period before his attack of illness. Even if the patient has been out of town for a day or a part of a day at a time, we assume an exposure to the bacillus while on such a visit. It is not always possible to obtain accurate information on this point. The patient is asked if he has been out of town during the past few weeks? He will usually answer no, he has not, but when we come to question him more closely, we find that perhaps he has been out of town for a few hours on Sunday; and this custom of going out of town a part of the day is common, even among the poorer classes. But, in

a small minority of cases, we get positive information that the patient has not been off Manhattan Island for months.

It is believed that Croton water is free from the typhoid bacillus. In some instances it is probable that the source of infection is contaminated milk; sometimes perhaps from vegetables or other articles of food; we are even willing to admit that the beloved bivalve may be responsible for an occasional case. With all care and giving all attention to the question of etiology, we are met with the fact that in a certain proportion of cases it is impossible to trace any reasonable etiology.

The cases to which I shall refer were observed in the wards of the Third Medical Division of Bellevue Hospital. This is one of the four medical divisions of the hospital. There were 104 cases with 10 deaths; a mortality of 9.6 per cent. Of these 104 cases the histories of 87 only were sufficiently accurate to make any tabulation. Of these 69 were males and 18 females. The ages of these patients ranged from fourteen to fifty-nine, 17 cases from fourteen to twenty.

(I ought to say that this period is only six years, because patients under fourteen years of age are not taken in the regular medical wards of Bellevue Hospital, but are assigned to the children's wards.)

From the ages of twenty to thirty there were 54 cases; from thirty to forty, 12 cases, and 4 were over forty years of age.

Occupation.—Artisans 14, laborers 20, domestics 12, housewives 8, messengers 11, soldiers 5, students, salesmen, etc., 14, not stated 3.

Social Status.—I group under this head all information obtained from the personal history, the occupation of the patient, the condition in life, the surroundings, the opportunities for obtaining proper food, etc. It is sometimes necessary to obtain this information from friends of the patient.

Poor condition, 28 to 33 per cent.; fair condition, 44 to 53 per cent.; good condition, 11 to 14 per cent.; not stated, 4 per cent.

Necessarily the standard of social status in a charity hospital must be low. These percentages are therefore relative only.

Physical Condition on Admission.—The proportions may be summarized as follows: poor, 24 to 29 per cent.; fair, 35 to 42 per cent.; good, 24 to 29 per cent.; not stated, 4 per cent.

Use of Alcohol.—These may be divided in four groups, thus: abstainers, 34 to 43 per cent.; in moderation, 30 to 38 per cent.; immoderate, 15 to 19 per cent.; not stated, 8 per cent.

Where the statement is made "not stated" either the patient was not in condition to give the history or the friends could not give it.

It will be noticed that the percentage of the immoderate use of alcohol is not high. In almost any other class of cases in Bellevue Hospital, particularly among males, the percentage of those who use alcohol immoderately is very much higher, as is strikingly illustrated in pneumonia, where the percentage of the immoderate use of alcohol is between 60 and 70.

Initial Chill.—Of the initial chill or decided chilly sensations patients are apt to give an indefinite history, but care was taken to get as definite statements as possible. The figures show:

Chills or chilly sensations absent, 35 to 43 per cent.; chills or chilly sensations present, 46 to 57 per cent.; not stated, 6 per cent.

Condition of Bowels.—Diarrhea, 50 to 57 per cent.; constipation, 20 to 24 per cent.; regular, 15 to 1 per cent.; not stated, 5 per cent.

The percentages of the conditions of the bowels vary very much in different years. In some years the percentage of

patients with diarrhea is very much larger than in others. If there have been more than two movements of the bowels per day the record was made that there was diarrhea.

Epistaxis.—This symptom was absent in 47 cases, fifty-nine per cent.; present in 33, or forty-one per cent., and not stated in 7 cases.

Eruption (Rose Spots).—Absent in 20, or twenty-three per cent.; present in 67, or seventy-seven per cent. This, again, varies very much in different years. In some years the percentage of cases in which the eruption occurs is small; in other years it is large. In some instances the eruption will be very abundant. There were two cases in which the eruption covered the body to such an extent that it led to doubt as to whether it was the typhoid eruption. One patient in particular looked almost like a child covered with the eruption of measles. The fever ran a mild course in this patient, and he recovered. In another case the eruption was very abundant, and some of the spots of eruption became petechial. This was a very severe case, and the patient died.

Enlarged Spleen.—Careful examination showed it to be absent in 20 cases, twenty-three per cent.; present in 67 cases, seventy-seven per cent. The enlargement was determined by palpation, percussion, or both. In some of the cases patients were brought to the hospital at a stage in the disease when the spleen had diminished in size to normal or nearly so.

Widal's Blood Reaction.—This more recent diagnostic test was absent in 10 cases, eighteen per cent.; present in 49 cases, eighty-two per cent.

Ehrlich's Diazo-reaction in the Urine.—The characteristic reaction was absent in 15 cases, twenty-six per cent.; present in 44 cases, seventy-four per cent. The figures for the Widal-test and the diazo-reaction were taken from the last 59 cases. In 6 cases the Widal-test was present, and the

diazo-reaction absent, whereas in 5 cases the Widal-test was negative and the diazo-reaction present.

Albumin in the Urine.—This was determined to be absent in 26 cases, twenty-nine per cent., and present in 61 cases, or seventy-one per cent. One case of true nephritis was observed.

Relapses.—Relapses occurred in 8 cases, nine per cent.; all recovered. In 1 case there were three relapses; in 2 cases there were two; in the other 5 but one relapse. The duration of the relapses varied from nine to twenty-two days.

Fatal Cases.—Of the 10 patients that died, 3 were laborers, 1 an artisan, 2 were domestics, 1 was a messenger, 2 were housewives and 1 a soldier. Seven were males and 3 females. In 4 the social status was poor, in 5 it was fair, and in only 1 was it good. In 6 the condition on admission was poor, in 2 it was fair, and in 2 it was good.

Complications and Sequels.—In four of the cases there was pregnancy. All recovered without aborting. There was chronic endocarditis in one case with recovery. Pneumonia and nephritis was present in one case. This patient died. In one case there was unilateral parotitis. It was only moderately severe and resolved without suppuration. Laryngitis with edema glottidis was a fatal complication in one case. Double otitis media was present in one case, while in five cases plasmodium malariæ was demonstrated during convalescence. Phlebitis occurred in three cases. In two of these it was single, both on the right side, and both involved the internal saphenous vein. The third case was a double phlebitis, involving the femorals. The patient recovered after a long period of sickness. In none of the cases was there gangrene. There was orchitis in one case. Four patients were addicted to the immoderate use of alcohol, three were moderate drinkers, and two were abstainers. Both of these latter were women. In one of the fatal

cases it was impossible to obtain information with reference to the use of alcohol.

I might mention in this connection a case which aroused much interest in the hospital, although not occurring in the Third Medical Division. A patient had had a moderately severe attack of typhoid and had convalesced slowly without any special features, and on the 28th day of his convalescence he was sitting in an arm-chair reading a paper. He had advanced sufficiently to be dismissed from the hospital and was simply waiting until the next day to be dismissed. He got up from his chair, suddenly had a severe pain in his abdomen, fell over in collapse and died in a few hours. The autopsy revealed a perforation.

Cause of Death.—The actual causes of death were as follows: Perforation, 2; pneumonia, 1; excessive high temperature, 2; laryngitis, with edema glottidis, 1; peritonitis, from the officious interference on the part of the house physician, 1. This last case was a very severe one, and had as a complication double otitis media. So far as the otitis was concerned the patient was apparently progressing favorably but had persistent tympanites. The house physician, without consulting the visiting physician, with a hope of relieving this tympanites, aspirated the intestine. The patient promptly developed acute peritonitis and died; autopsy showed the peritonitis as having apparently developed from this puncture. Three died apparently from exhaustion due to toxemia. One of these a woman of fifty-nine—fat and flabby. Decided hemorrhage occurred in only two cases, both in the third week. These patients recovered. Slight discharge of blood occurred in several other cases, but not of sufficient quantity to be called a hemorrhage.

The highest temperature recorded was $106\frac{3}{5}°$ F. In another case the temperature reached $106\frac{1}{5}°$ F. Both of these cases obstinately resisted all efforts to reduce temperature.

They are the two cases referred to among the fatal cases as dying from excessive high temperature.

Treatment.—Baths were resorted to in 48 cases; drugs and other forms of treatment in 39; the average number of baths was 20, though they ranged from 2 to 92 in number. In some cases the disease ran such a mild course that practically no treatment was resorted to.

The treatment was usually initiated by a dose of calomel, followed by a saline cathartic. This was, perhaps, repeated during the first week of treatment once in forty-eight hours, depending on the effects produced. Usually after the first week, if constipation was a prominent feature, as occurs in a considerable proportion of the cases, enemas were relied on for its relief. For the relief of the tympanites salol or beta-naphthol were relied on for internal medication. If diarrhea was a marked feature some form of bismuth, preferably the subgallate, was added. For external application for relief of tympanites, hot turpentine stupes or the cold Leiter coil was used. If the patients were seen during the first week and wakefulness was a prominent symptom, with decided delirium, hypnotics were used. These were specially indicated in many of the decidedly alcoholic cases. If the wakefulness was pronounced and headache severe some preparation of opium would answer a better purpose in giving relief. Sometimes the ice to the head was resorted to with relief.

As stimulants, alcohol, in the form of whisky, strychnin, and caffein were relied upon. The last in only a few instances. Only in pronounced alcoholic cases was alcohol commenced early; in the other cases alcohol was resorted to only when there were special indications, as shown in the condition of the pulse and nervous system. Alcohol was not used indiscriminately, but only in cases which specially indicated it. It was used most freely in the cases showing the restless wakefulness of exhaustion, or in the

exhaustion of the nervous system or circulatory system. Rarely was it necessary to use more than 6 or 8 ounces in the twenty-four hours. In exceptional cases, perhaps, that was increased to 10 or 12 ounces. The alcohol was stopped as soon as indications for its further use were past. Water was given to the patients freely. Milk formed the main article of diet throughout the course of the attack. Animal broths, well salted, were allowed once or twice a day. In some cases the white of an egg would be added to a glass of milk three or four times a day. In cases of alcoholics, where the gastric irritability was pronounced, and even milk produced disturbance, Vichy was added to each glass of milk in the proportion of 1 part of Vichy to 3 parts milk. In some cases, when the milk was repulsive, koumyss or matzoon was substituted with very satisfactory results. This was the line of diet until convalescence was established, and even then great care was shown as to the giving of solid food. The plan followed was to continue this line of diet for eight or nine days after the temperature had touched normal. I mention this fact because of our unfortunate experience in the attempts to resort to solid foods earlier in convalescence, as is the method followed by some excellent observers.

TYPHOID FEVER IN THE YOUNG.

By A. Jacobi, M. D., LL. D., of New York.

The literature of the typhoid fever of infancy and childhood is very copious; that of the last twenty years is not exactly worthless, indeed a number of magazine articles are quite valuable. But they do not compare with the very first publications on the subject which appeared at a time when typhoid fever had not long been recognized as an independent morbid entity. Amongst those which should be read to-day, in order to gather almost everything connected with the subject, with the exception of the diazo and Widal tests, are Taupin in the Jour. des Conn. med. et chirurg. of 1839, who explains the apparent infrequency of typhoid fever in the young by the mildness of most cases; F. Rilliet de la fièvre typhoide chez les Enfants, Paris 1840, and the article on the subject in Rilliet and Barthez's great handbook in 1853; Louis and Andral in 1841. A paper of A. Baginsky in Virchow's Arch. Vol. 49, of Henoch in the Charite Ann. Vol. II, 1877, the thesis of George's Montmollin (1885.) (Observations sur la fièvre typhoide de l'enfance), and the article of C. Gerhardt in the second volume of his great "Handbuch" in 1877. The most meritorious of all the contributions to the knowledge of our subject, however, is the little book of Edmund Friedrich, "Dor Abdominal typhus der Kinder, Dresden, 1856." My advice to all modern and future writers on any topic connected with the question of typhoid in children is to first consult the 102 pages of that monograph, which is apt to teach the often forgotten lesson that medicine is not of to-day nor of yesterday, that there have been great and good men worth knowing before we were born, and that the

history of our science and art is sadly neglected amongst us.

Infection and Contagion.—The opportunities for infection or for contagion are the same for the young as for the old. The bacillus has been found active though it had been dry for months; in the soil and in clothing after one or two months. Into water and into the soil it is introduced with typhoid discharges which carry contagion though they have been in contact with putrid material. This experience explains isolated cases, and those attributable to the influence of sewers, privies, and the transmission through the atmosphere. Flies have been charged with carrying the poison. Infected water used for drinking, or for washing the bottles and cases in which milk is kept, is responsible for hundreds of epidemics. Contagion from patient to patient in hospital or tenement, by bedding, by the hands of the attendant, by the use of the same unwashed thermometer for the typhoid and non-typhoid are surely either possibilities or facts. The foetus and newly born may obtain their typhoids through the blood of the mothers; contagion through the milk of the mother is not improbable though in most of such instances the suspicion may be directed to other sources. Infants have a great advantage in the fact that their typhoids are not frequently attended with characteristic stools and are therefore not so dangerous to its neighbors; again they are not roaming about the floors where older children pick up infection, and the water they drink or eat is almost always boiled. The latter fact alone explains the relative absence of typhoid fever from the first year of life.

SYMPTOMATOLOGY.

Temperature.—The severity of the illness does not correspond with the body temperature. A girl of 9 years, whose case is reported by Gerloczy, in D. Med. Woch. No. 15,

1892, had unconsciousness, diarrhoea, very frequent pulse, universal hyperaesthesia, roseola, abscesses and bronchial catarrh, and got well after 39 days. During all this time there was no marked increase of body temperature. It appears that very severe cases of typhoid fever, when exhibiting bad cerebral symptoms, are liable to have low temperature on account of the thorough sepsis prevailing. If so, the prognosis is very bad.

Belei Medvei f (Intern. Klin. Rundschau, 1891, No. 35 and 36) observed a girl of 12 years who was taken sick with severe headache, restlessness, chill, pain in neck, unconsciousness, myosis, unequal pupils, rapid respiration and a temperature for four days from 36.8 to 37.5° C. Then the temperature rose and the typhoid symptoms of spleen and of caecum and diarrhoea made their appearance.

This absence of high temperatures does not astonish those who see a good deal of sepsis, and of sickness complicated with weak heart. Temperature and danger need not correspond. The very feeble are not as a rule subject to high temperatures any more than the very old; and quite often the worst cases of sepsis are those which exhibit low temperatures. This is a fact best known to those who see much diphtheria, or puerperal fever.

Observations of high temperatures previous to the appearance and recognition of the symptoms are not frequent. While an adult would be about his work, the infant or child is seldom considered sick enough to claim attention and attendance. That is why chilliness and chills are readily overlooked; indeed the latter are not marked as a rule in any illness of the young. The rise of the temperature in the typhoid of the young is mostly gradual, high in the second stage with slight remissions and gradual falls toward the end of the disease. This rule, if it can be so called, is subject to many exceptions. The temperature of small infants may be very irregular, is in many cases rather low

and uniform, in others high with few and short remissions. Irregularities, moreover, often depend on complications. After all neither those who, like Baginsky and Roemheld, consider the typhoid of the nursling and infant as a uniformly severe disease are always right, nor are those who make light of it. The degree of individual infection, and the nature of the epidemic are factors to be considered.

Complications disturb the regularity of the temperature curves. For instance, otitis is quite frequent. In connection with it we should not forget that the otitis media of the infant need not terminate in perforation of the drum membrane; for the pharyngeal end of the eustachian tube is so large a funnel at that early age as to permit the discharge of pus from the middle ear. An occasional complication is scarlatina; during the last two years malaria has been a more frequent complication of typhoid than I have ever known it before. Suppurating arthritis, diphtheria of the throat or of the vulva, both bacillary and streptococcic, are detrimental in the same way. Constipation is also an occasional cause of the rise of temperature; the regular visiting hours of hospitals, even without clandestine feeding, are apt to increase temperatures. Now and then there are two regular daily curves. That is another reason why the rectal temperature should be taken at least 4 times in 24 hours.

Digestive Organs. The condition of the lips, tongue and mouth, may depend on previous catarrh, angina, or the presence of adenoids; otherwise on the severity of the typhoid; and exhibits the same surface changes of the epithelium and mucous membranes that are observed in the adult. The lips are frequently dry, the tongue mostly moist, its epithelium accumulated in the centre, the edges red, or the whole tongue red, and dry, covered with dry epithelial scabs, torn, or ulcerated. Large ulcerations are mainly noticed during unconsciousness, smaller ones may

be quite numerous on the hard and soft palate in every severe case. There is no herpes. The throat shows angina, the tonsils are swollen, in exceptional cases covered with a pseudomembrane which once, in a boy of nine years, continued through the whole length of the oesophagus to below the cardia. In bad cases of older children, or in the few that occur in the nursling when the mouth is kept open because of the narrowness of the nasopharynx, of indolence or unconsciousness, thrush is met with as it is in the worst cases of adult typhoid, or in moribund phthisis. Stomachache is less frequent, noma still less so; the latter is observed only toward the end of the illness, or during apparent convalescence. Fortunately, during nearly fifty years, I met with half a dozen cases only, one in a baby of eight months, one in a girl of eleven years, all fatal. Baginsky, however, reports a case of noma that recovered. It may be added that noma is not quite so frequent after typhoid fever, as after some other infectious diseases, prominent amongst which is measles, where I have seen at least a dozen instances. Parotitis may terminate in perforation either outwards or through the external ear. Abscesses of the submaxillary gland I have seen in few cases only. Otitis media is an occasional complication originating in the pharyngeal changes. The appetite is proportionate to the fever, the dry mouth and the degree of unconsciousness; during convalescence the hunger is great and conducive to dangerous mistakes in diet. Vomiting is noticed in bad cases and is caused by the condition of the digestive mucous membrane, occasionally by meningitis, and sometimes by accompanying or consecutive nephritis.

Diarrhoea is a frequent symptom in typhoid fever, either before its apparent outbreak, or in the first week, or at a later period. It appears to be of a catarrhal nature, induced probably by the presence of bacilli and their toxins. In the later periods of the disease it certainly depends on

the presence of ulcerations. But to expect diarrhoea as a common symptom is a mistake occasioned by the statements of many European books. In the other hemisphere diarrhoeas appear to be more general than with us. I think we miss it in one half of our cases. Even the assumption that with ulcerations there must be diarrhoea, is not founded on uniform facts. In ward 28 of Bellevue, in 1887, I had a girl of eleven years who was under close observation during her typhoid fever, for several weeks. The case was one of unusual severity—spleen, lungs, skin and nervous system yielding the usual symptoms; there was no diarrhoea at any time. She died with the symptoms of perforation. Perforation caused by one of the typhoid ulcerations was found at the autopsy. Nor is this the only case of the same description in my experience. In the proceedings of the Pathological Society, twenty-five years ago, there is mentioned the case of a man who died in my service in Mount Sinai, also with perforation of an ulcerating intestine with no previous looseness of the bowels.

Constipation is not an uncommon symptom in the beginning of the typhoid fever of the young though diarrhoea may develop towards the end of the first or during the second week, while on the other hand, diarrhoea may be observed amongst the prodromi or in the first week and be replaced by constipation.

In almost all cases of typhoid in the young and old intestinal ulcerations are common, but exceptions to this rule are met with. S. Flexner and N. M. Harris (Bull. John Hopkins H. Dec. 1897) detail the case of a man of 68 years who had typhoid fever with bacilli in many organs but no intestinal lesions, A. G. Nichols and C. B. Keenan (Montreal M. Jour. Jan. 1898) one with positive Widal test, and tumefied spleen and mesenteric lymphnodes, and no intestinal lesions, E. Hodenpyl one that died on the 17th day of illness, with ulcerations in the large intestine, but none in

the small. This absence of intestinal lesions is rare indeed in the adult; in the young, mainly in the very young, it seems to be less rare. As a rule it may be stated that the intestinal tract suffers more in advanced age, the blood more in the early. According to Bryant (Brit. Med. Journal, 1899, I. p. 766) fifteen cases of typhoid fever are known to have exhibited no intestinal lesions. His case was that of a boy of one year and nine months; it occurred in a family in which there were other cases of typhoid fever. There was a characteristic fever curve, diarrhoea, tympanites, tumefaction of the spleen, and a positive Widal reaction. At the autopsy there were pure cultures of bacilli in the enlarged mesenteric glands, but no intestinal ulceration. In one of his autopsies Henoch found but one Peyer's plaque that was slightly swelled. In the N. Y. Med. Journal of July 29th, A. J. Hartigan, assistant in the Bender Laboratory of Albany, N. Y., reports two cases of typhoid infection without any intestinal lesions. Of the older literature of such instances he quotes Louis, more than half a century ago, and Litten, Moore and Church, between 1880 and 1882. He then continues: "The bacteriological era in the investigation of these forms begins with Banti in 1887. In his case death took place on the twenty-eighth day of the disease. No intestinal lesions were found, but the spleen and mesenteric glands were swollen; in them bacilli morphologically similar to the bacillus typhosus were found." He quotes seventeen authors, and adds his own cases, without, however, mentioning Hodenpyl.

It should be stated, however, that the statistics of intestinal ulcerations with perforation are not conclusive; many are observed in private practice, not counted, not reported, and forgotten. Again, now and then a case is reported as a curiosity without reference to the number of cases observed and other important points. Barrier met with 2 perforations in 24 cases, a very unusual proportion; Montmollin

reports 7 cases in which perforation was diagnosticated, 3 of which recovered—a proportion of spontaneous recoveries able to arouse the jealousy of any operator. Long ago Barrier and Bouchut made similar observations on the adult and concluded that the anatomical alterations of the intestine may be absent. Chiari (Z. f. Heilk, 1897) while finding lesions in the stomach, and bacilli in different organs, and septic symptoms, found no intestinal lesions. In 19 collected cases while the Widal test was positive, the same absence of intestinal lesions was marked. So the latter is not conclusive. The last case of the same nature was published by A. McPhedran in the October issue of the Philad. Monthly Med. Journal (1899).

Gurgling in the ileo-coecal region, both with and without pressure, is common in intestinal catarrh both infectious and non-infectious; that is why, under ordinary circumstances, it should not be held to be characteristic of typhoid fever. It would be more so if complicated with constipation, and with some of the more frequent symptoms of typhoid fever. Incontinence of the sphincter ani is not so much the local result of the infection as of unconsciousness; when it occurs during convalescence it depends on hyperperistalsis mostly combined with colic. Tympanites is usually very moderate, for general peritonitis is very uncommon except with perforation. Sensitiveness of the abdomen is frequent without the diagnosis of local peritonitis being always within easy reach. This latter form is, however, quite frequent, for in the autopsies of children, or of adults, who died of other diseases, local discolorations and thickenings, of a greyish white or yellow color are often found on the peritoneal layer of the intestine, above, near or below the coecum. They are the results of previous local peritonitis corresponding with the locality of ulcerations during typhoid fever, or any of the forms of enteritis in former years. Unexpected perforations of the intestine, oc-

curing in advanced years during apparently perfect health, are the final results of such local peritonitis.

Hemorrhages in the very young are exceptional, and are mostly mild in children of more than four years. I have seen it more than half a dozen times. In a girl of ten years the loss of blood was such—there being several hemorrhages in the course of the third week—that I attributed the supervening heart failure to exhaustion only. Both the number and severity of hemorrhages appear to depend on the character of the epidemic or on the season. In the very young I sometimes saw no tinge of blood in five years, and in a single season eight years ago, I met with two, not fatal, cases of hemorrhages in girls of 5 and 7 years. This very autumn I have seen four cases of typhoid fever in children of from five to nine years, in which mild hemorrhages occurred. Of Henoch's 9 intestinal hemorrhages 5 were quite mild.

Organs of Circulation.—These are not affected to the same extent as in adults. The average heart of the young is stronger, and less diseased. Endo-and peri-carditis, embolisms and thromboses are rarer than in advanced age except in very bad and protracted cases in which the myocardium was deteriorated by the bacillary toxin. For the same reason complete adynamia is not so frequent, at least in the first week or weeks. During increasing inanition, however, the circulation is impaired as best shown by the coldness of the feet. The gums bleed but rarely, the nose not so often in infants and the very young as in older children. The pulse mainly during the first two weeks, except in the small infant, where it is liable to be feeble and frequent, is either in correspondence with respiration and temperature, or frequently slower and quite strong. When it becomes feeble and frequent, with or without intermissions, it impairs the prognosis and demands persistent stimulation. It is rarely dicrotic. When it is in this weak condition, the

heart beats are no longer distinct, they are muffled, one or the other splits in two, and an apex murmur becomes audible. This should not be taken as merely functional; the myocardial weakness which occasions it is toxic and organic, and may remain as a permanent lesion.

Spleen.—The irregular respiration of nervous or frightened infants and children, their tympanitic colon, and high diaphram, possible exudation in left pleura or lung, and the struggle against examination whether painful or not render the diagnosis of the condition of the spleen difficult. In perhaps one-half of the cases it is, however, successful. Percussion succeeds less than palpation, which may reveal the lower edge of the spleen. It is rarely felt before the end of the first week, about the time when roseola appears, earlier, however, when the fever is unusually high. When it diminishes rapidly in the middle of the third week the prognosis is good; if not, there will be a relapse. When a relapse takes place, the spleen, which was greatly reduced in size, is liable to swell very rapidly. Permanence of this swelling of the spleen, however, is much rarer after typhoid than after severe malaria fevers, and abcesses are quite exceptional.

Respiratory Organs.—The nasal mucous membrane is dry, covered with thin crusts, and irritating like the lips, which are in a similar condition. Epistaxis is not infrequent in older children. Together with pharyngitis there may be a catarrhal laryngitis. This and the dryness of the mucous membrane cause hoarseness and cough; oedema of the glottis, which is fortunately rare, causes dyspnoea or strangulation. Superficial and deep ulceration of the trachea or larynx, and perichondritis are exceptional, but I have met the necessity of performing tracheotomy in such cases twice. One was the case of a girl of seven in which scarification of the interior of the larynx was unsuccessful—the child was saved by the operation—the other tracheotomy

was made during convalescence on a boy of ten years because of an abscess developing over and behind the manubrium sterni. He died after many weeks of pyaemia, the main source of which was found about the lowest rings of the trachea and the mediastinal lymphnodes. Bronchial catarrh is frequent, without much cough as long as the respiration is shallow; with cough on deep inspiration; catarrhal pneumonia is not rare, and mostly bilateral; croupous pneumonia is also apt to be bilateral. The more frequent form of pneumonia, however, in the protracted cases of feeble patients, is hypostatic, with a tendency to become bilateral at once, and to extend. Pulmonary gangrene is exceptional, but should be feared in every case of infectious broncho-pneumonia, complicated with a weak heart.

Pleuritis is comparatively rare, purulent in exceptional cases only; sometimes sanguinolent though there be no complication with tuberculosis. Complications with diphtheria of the bacillary variety (nasal, pharyngeal, or laryngeal) are not common. When they occur during the prevalence of a diphtheria epidemic, they are grave accidents.

Urinary Organs.—The urine is mostly of a high color, contains in the beginning much urea and uric acid, less chlorides than normal, indican sometimes, albumin frequently at an early period, and more so during the height of the disease, renal epithelia, blood, thin granular casts, and occasional bacilli. The renal irritation exhibited by the microscopic appearance is that which is usual in most infectious diseases, and is due to the effect of the toxin while being eliminated through the kidneys. Symptoms connected with this elimination need not be very marked, and need not lead to nephritis. Still, the latter may follow. Even pyuria has been found, for instance by G. Blumer in children, one of 13 and one of 10 years (Johns Hopkins Rep. Vol. V).

Retention of urine is rare in children, and only when there is coma or much peritonitis. In that case, and whenever it is important to secure urine for examination, catheterization should be resorted to. It is more easily performed in the young than in the adult, and more readily in boys than in girls. Under ordinary circumstances, when the catheter is not employed for some reason or other, a big ball of absorbent cotton will collect urine enough for the usual examination of the urine. Polyuria is seen during convalescence when much water is drunk. In that period dropsical effusions may be observed with or without albumin; it should not be forgotten also that salicylic acid or antipyrin when employed may cause oedema; and further that there may be nephritis without albuminuria. The diazo test is mostly positive towards the end of the first week, and remains so until the middle of the third, sometimes very much longer. Its absence, however, is no proof against the presence of typhoid fever. Roemheld missed it altogether in many cases.

The observation made by Lafleur and others that the urine voided after cold bathing exhibits a high degree of toxicity would rather speak in favor of that treatment; for the more toxic the urine and dangerous to the laboratory animal, the less toxin there is left in the patient. Elimination, as speedily as possible, is what should be aimed at. And whatever diuretic effect there is in cold bathing as in other remedies, is welcome, as long as the condition of the patient permits it. How rarely that is so, will be seen in the remarks I have to make on therapeutics.

Skin.—The tendency of the skin is to be dry; that is why chronic eruptions are liable to disappear during the illness and to return when recovery is complete. This dryness is also the cause of the transverse fissures under the knee which Koebner explains by the cooperation of the lifeless epidemics, the vigorous growth of the extremities and the

inflected posture of the knee; it also causes the extensive desquamation before and during convalescence.

The characteristic roseola exhibits the same peculiarities that are noticed in the adult; it is absent in perhaps twenty per cent. Morse collected 371 cases in 406 where it was present, Henoch found it 362 times in 381 cases. It is not uncommon in the very young. I found a few spots on the epigastrium of a newly born that died on the sixteenth day of its life. Gerhardt (Handb. Vol. II, p. 373) met with roseola (and a tumefied spleen) in a baby of 3 weeks. It may appear as late as the eleventh or even the fifteenth or seventeenth day, is mostly not so copious as it is in the adult, and occurs preferably on chest and abdomen, but also on the back and on the extemities. When the temperature is high at an early date, roseola may appear early, on the third or on the fourth day, and new crops may occur afterwards. In relapses it is more frequently missed than in the primary attack, but a new crop in the fourth week means a relapse. Petechiae are not frequent, but do occur in children of more than seven or eight years, also in the very young; when complicated with extensive purpric extravasation, it is ominous.

Miliaria is sometimes observed when there is exceptional perspiration; and erythema during the height of the disease when there is much intestinal disorder and coma as the result of direct toxic or of auto-infection. Eczema is the result of uncleanliness only, gangrene, abscesses, furuncles and pustula are frequent occurrences, but in the later periods of the disease only.

In bad cases, and mainly when the hygiene of the skin is neglected, abscesses will appear in it and in the subcutaneous tissue, preferably on the head, face and chest. Slight irritations are sufficient to act as proximate causes. A child of two years developed the first abscess on the epigastrium in consequence of a subcutaneous injection of

quinin. More followed, mainly on the hands, fingers and feet; more than sixty were incised in the course of a few weeks until finally recovery set in. In a child of two years I saw copious hemorrhages about the ear, groins and neck with consecutive gangrene, in a boy of nine extensive destruction of the skin over more than one half of the abdomen; in both cases with final recovery.

The desquamation of typhoid fever may be quite copious and resemble that of measles or even of scarlatina. On the other hand some of the eruption of the two latter may resemble the roseola of typhoid fever. That is why the diagnosis may become difficult, particularly as, and I have seen some, the latter and one of the former may be contemporaneous. Thus Cosgrave (Brit. M. Jour., Jan. 16th, 1897) reports five cases in which scarlet and typhoid fever were coincident, without seeming to increase the degree of danger. Both started at the same time. From George M. Gould's American Year Book 1898, p. 625, I quote Amitrano, who reports a case of typhoid fever developing in convalescence a scarletiniform eruption with fever which was followed by desquamation. After this fever had subsided marked meningeal symptoms appeared for a few days. These disappeared and after desquamation was complete a second intense erythema appeared, which was also followed by desquamation after which recovery ensued.

Bones.—The bones suffer in different ways. The characteristic increase of growth after infectious fevers is mostly observed in scarlet, and in typhoid fever. Epiphyseal and general pain about the extremities is frequent in typhoid fever, and some degree of epiphysitis is common in consequence of this irritation. Periostitis and osteomyelitis have been observed, and bacilli have been found in the latter. Before the advent of the bacillus I lost a child of four years with osteomyelitis of the right femur in spite of early operation. Such cases are fortunately not frequent, but it ap-

pears they occur in from 1 to 2 per cent. of all typhoid fever. Chondritis is still more infrequent, with less serious results.

Nervous System.—The nervous system of the young is believed not to be affected by typhoid fever as is that of the adult. There are cases in which the general condition of the patient appears to be unusually good compared with the toxic nature of the whole process and the height of the temperature. In many instances I concluded from nothing but the apparent comfort and ease of the patient when the high temperature would have suggested the presence of severe subjective symptoms that everything but typhoid fever could be excluded. The same holds good in adults. In them ambulent cases are by no means rare, and those in bed often demand permission to get up, expressing the most complete satisfaction with their condition while their temperature ranges at or above 104. Other children are apathetic, or somnolent, or peevish, and restless. The "typhoid state" should not by itself be taken as a symptom of typhoid fever. It may be absent altogether, and is found now and then when there is no typhoid. Headache is frequently complained of, or is betrayed by vertical wrinkling. Hearing may be bad, the conjunctivae injected and the cornea cloudy under the influence of the toxic disturbance of the trifacial nerve. Grinding of the teeth, sopor, or delirium, vehement screams resembling those of meningitis are occasionally met with. Such symptoms though ever so severe need not correspond with the elevation of the temperature at all; the latter may be rather low while the intoxication is quite pronounced. Not every case of seeming cerebral or meningeal symptom should be attributed to cerebral affection only; still, contractures or convulsive movements may occur when there is an effusion from the pia mater. Such complications of genuine meningitis with typhoid fever certainly occur, and not only after

the eighth or tenth year when gradually the typhoid fever of the very young resembles more and more that of advanced age. Kernig's symptom may be employed to clear up the diagnosis of genuine meningitis.

Some of the symptoms common to both may be explained differently. Vomiting may be due to the toxic degeneration of the cerebral substance, or to meningitis, or to the abnormal condition of the stomach or even of the pharynx, or to nephritis. Coma or delirium I have seen in typhoid, in meningitis, also in cinchonism, and under the influence of salicylic acid.

As consecutive symptom aphasia was found twenty times by Henoch; half a dozen times I have seen it in the course of many years; with the exception of one that suddenly died probably of myocardial degeneration, all of them got well. Polyneuritis is not rare, in severe epidemics it is frequently seen, usually with a favorable termination. It is due to tissue alterations occasioned by the influence of the bacillary toxin. Hemiplegia is rarely observed; a case of "cerebellar ataxia" in a boy of seven, which terminated in recovery, was reported by Luigi Concetti in La Pediatria, No. 8. 1898.

Paraplegia is more frequent, and still more so is local paralysis under the influence either of the toxin, or of a hemorrhage, or of an embolus. Amongst them are paralysis of the glottis which necessitated tracheotomy in a case of Rehn's, of the abducens which I have seen in quite a number of cases, most of which were obstinate, some permanent, and of the accommodation muscles of the eye. Paralysis of the sphincter of the bladder is not infrequent.

Psychical disturbances are seen as sequelae of every infectious fever, mainly scarlatina and typhoid. Four such cases were reported by S. S. Adams to the Amer. Ped. Society in 1896. They may result from inanition, or from the parenchymatous tissue changes caused by the toxin, or by

meningitis. Mania or melancholia are the two forms mostly met with. Not all of them terminate favorably. Two of my early cases died in lunatic asylums in rather advanced years. The motory disturbances not paralytic, following typhoid, particularly chorea, have all got well in my recollection, a few only with relapses. It struck me that post typhoid chorea was less subject to recurrences than other forms.

The following particulars of two sets of observations will prove that the symptoms, course and complications of the typhoid fever of the young may greatly differ from one another or from any average description of its nosology. One I published in Arch. Ped., March, 1885. The number of typhoid fever cases treated in the Children's Pavilion of Bellevue, from October, 1882, to September, 1884, was 25. Of these 11 were males, 14 females; 17 ran a single course, 5 had relapses, 3 were sick over a period of from 4 to 6 weeks without permitting the second attack to be distinguished from the first by an alleviation of the symptoms. In 7 cases, a distinct chill ushered in the illness; in six several attacks of chilliness were noticed. The ages of the patients ranged from 2 to 14 years, the average 9. Pain in the ileo-coecal region was complained of in 14 cases, diarrhoea was noticed in 15, bloody stools not amounting to hemorrhages in 3, in 3 constipation was mentioned as a notable fact; in the first week of 6 epistaxis was observed, tumefaction of the spleen was noted in 16. Roseola was observed in 14 cases, its first appearance was noticed between the 5th and 7th day; it lasted from 5 to 10 days. Premonitory symptoms were reported in 9 cases; in 4 they lasted two weeks. They consisted in lassitude, anorexia, change of temper, and in some few cases diarrhoea set in a week before the initiating chill or chilliness. Five of my cases died, one remained stupid and hard of hearing for some time, but recovered.

Contrary to my experience (Med. Record Nos. 17 and 18, 1879) of a mild type and a low mortality for the typhoid

fever of infancy and early childhood, this Bellevue service of mine had a mortality of 20 per cent. similar to that of Oesterlen who estimated it at 22 per cent., and Friedrich who reported 23 per cent. in children under 5 years of age.

In 1882 and 1883 we had a bad epidemic of typhoid amongst all classes and ages. The guests of summer hotels and boarding houses imported hundreds, and the whole population suffered in consequence; infants and half-grown children as much as the rest, and the mortality all over the city was high, especially in the hospitals, though their statistics must necessarily be erroneous. Errors arise because, with us at least, hospitals do not treat average cases, but those only who fare badly and promise badly. A poor family will nurse its children while they require but little care; only the seriously ill or excessively troublesome, are sent to the hospital. Of that class many will die; hence the mortality of a hospital does not indicate the general character of the epidemic. That also explains why the general practitioner, singly or collectively, is the better judge and statistician. He sees all the cases in a family—those remaining at home and those sent to a hospital—sees the mild and the severe cases, and counts those who survive. Six cases in a family, one of which is sent to and dies in the hospital, may give the family practitioner a mortality of 16, the hospital attendant one of the 100 per cent.

Another series of observations was published by F. Sbrana (Arch de Med. der Enf., Jan. 1899). He reports on 72 cases of typhoid in children from 16 months to 8 years old, whom he observed in Tunis; 75 per cent. of all cases occurring in that subtropical city were in children; in one family there were 4, in another 3 cases. Why there should be prevalence of cases of children, is perhaps best explained by Jeannel's reports made to the fourth French Congress of International Medicine in 1898. He observed an epidemic of typhoid fever in which the communication may have oc-

curred through the dust of the street into which typhoid dejections were thrown. The principal and first sufferers were children, who were playing in the street, and not very particular as to what they carried to their mouths. Both their size and habits I counted many years ago and repeatedly since, amongst the causes of the frequency with which follicular angina and also mediately diphtheria are so numerous amongst the young.

The premonitory symptoms of the majority of cases consisted in anorexia with headache, vomiting and constipation; the run of temperatures was quite irregular. In 50 per cent. there was epistaxis in the beginning and diarrhoea at a later period. Gurgling in the ileo-coecal region was not observed in patients less than three years old, and was altogether not common. Roseola was noticed in one-third of the cases, the spleen was enlarged in every one after the fifth or sixth day. There was no intestinal hemorrhage, and the fever disappeared by lysis. There was a furfuraceous desquamation in four cases; the mortality II, I per cent.

There were many complications, suppurating parotitis in 2, peritonitis from perforation 1, purulent pleuritis 1, with considerable dilatation of the stomach during convalescence, aphasia terminating in 5, orchitis of the left side without suppuration 1, and meningitis 3, 2 of which terminated fatally. All those cases looked very much like cerebrospinal meningitis; still, there was the tumefied spleen, and no herpes. In other cases there were milder cerebral symptoms, such as dysphagia, partial convulsions, aphasia, inequality of the pupils, without strabismus or vomiting.

Age, Mortality.—Friedleben placed the greatest frequency of typhoid in childhood between the 5th and 8th year, Griesinger between the 5th and 11th, Loeschner and Fredrich between the 5th and 9th, Rilliet and Barthez between the 9th and 14th, Barrier between the 8th and 15th and

Fauconnet between the 10th and 20th year. A few other figures contained with the above in Gerhardt's Handbuch, Vol. II, are as follows: Murchison noticed that 20 per cent. of all the inmates of the fever hospital were less than 15 years, von Franque collected all the typhoid cases of the province of Nassau and found 2,021 of 11,028 to be less than 10 years, Gaultier gathered many French statistics and reported 31 per cent. below 15 years. In a small town Baginsky counted 16 cases under 10 years out of a total of 50, Rosenthal 28 in 115, Schaedler 11 in 144. Holt (Textbook, p. 1008) quotes 970 cases from 8 authors; 8 per cent. were under 5, 42 per cent. from 5 to 10, 50 from 10 to 15 years old. Montmoullin (Thèse de Paris 85) reported 15 cases under 2 out of a total of 295 under 15 years. Schavoir in Stamford, Conn., collected 406 cases of all periods of life; of these 68 were under 5 years, 72 between 5 and 10 years. Morse reports 284 cases of the Boston City Hospital; 3 were under 5 years, 77 from the 5th to 10th, and 204 from the 10th to the 15th year. He concluded that typhoid is unusual in infancy because the Widal reaction was negative in 2 cases of simple diarrhoea, 45 cases of fermental diarrhoea, and 3 of ileo-colitis—with the exception of one whose mother had typhoid fever years before. It will be seen, however, that in none of these cases was the diagnosis of typhoid fever made or suggested. As there was no typhoid there was no Widal.

All these figures and results are in confirmation of the earliest observations. Griesinger, for instance, wrote in 1857 (Virch. Handb. II, 2, 124): Typhoid fever is very rare in the earliest infancy; it is only from the 2nd to the 3rd year that the disposition becomes greater; after that it grows rapidly so that typhoid fever is quite frequent amongst us. (Germany.) Bouchut denies the occurrence of typhoid in the newly born; according to him it occurs first between the 1st and 2nd year. There are, however,

well observed cases of typhoid fever in the newly born. Gerhardt quotes Charcellay who saw it in a child of 8 days. Bednar 5 days, Necker 13 days, and reports a case of his own at 3 weeks. I had a case, the mother having typhoid fever when the child was born; in the latter I diagnosticated the disease on the 9th day. There were a few spots on the epigastrium on the 16th day, a large and soft spleen, and Peyer's plaques swollen and rather soft, not yet ulcerated. The infant died on the 16th day of her life. C. P. McNab (N. Y. Med. Jour., Febr. 19th, 1898) observed typhoid fever complicated with whooping cough and pneumonia in a baby a few weeks old.

The possibility of the transmission of typhoid fever to the foetus is beyond doubt. Clinical experience proves such transmission for typhoid fever, malaria, measles, scarlatina, variola and syphilis also erysipelas relapsing fever, tuberculosis and sepsis. In young sheep anthrax was found as early as 1882; chicken cholera and glanders are transmitted in the same way. But it is possible that the epithelium of the placenta is a frequent barrier, and the suggestion of Malvoz's that transmission of an infectious disease from mother to foetus occurs only when the villous epithelium is injured, I have always considered to be correct. He emphasizes the fact that of twins one may be affected while the other goes free. All these points are ably discussed by W. Fordyce in the Brit. M. Jour. of Febr. 19th, 1898. The typhoid fever of the mother may destroy the foetus, may allow it to be born alive but weak, or thirdly alive and vigorous. Which of these results occur depends on the amount of bacillary toxin transmitted or on circumstances unknown to us in an individual case. But the facts are firmly established. The foetal intestine, was found diseased by Manzoni in 1841, Charcellay in the same year, Weiss in 1862. Bacilli were found in the foetus by Reher, and Neuhass in 1886, in the

blood by Eberth in 1893; and the same results were obtained by Freund, Levy, Ernst, and Durck. Other good observations were made on the living child. The Widal test was found positive by Crozer Griffith (Med. News, May 15th, 1897), in a healthy infant 7 weeks old, that was born when the mother was in the third week of typhoid fever; and by Mossé (Progrès de Med. March 13, 1897), in a newly born who had typhoid fever when in the sixth month of her pregnancy, and whose milk and placentar blood gave the same positive reaction. Perhaps the case of Landouzy's proves the possibility of transmission though not through the placenta (Sec. de Biol. No. 6th, 1897). A healthy baby showed a positive Widal test while the woman had typhoid 3 months after confinement. As the baby had no other symptoms of typhoid fever, it is fair to suggest or to believe that transmission to a sufficient degree took place through her milk. The transmission of typhoid bacilli into the foetus is demonstrated by a case reported by Etienne (Gaz. hebdom, 1896 No. 16). A woman of eighteen years expelled on the 29th day of her typhoid fever a foetus in the 5th month of uterogestation. In its blood taken from the right heart, the spleen, the liver and the placenta, were tubercle bacilli, but no changes in the other organs. It appears that the death of the foetus resulted from the toxin which acted so rapidly that the organs had no time to participate in the process.

If, however, typhoid fever has been found by some in the foetus, in the newly born, in the nursling, there are those who never saw it at that age and therefore are inclined to deny its occurrence. In the Arch. Ped. 1895, p. 916, Dr. W. P. Northrup speaks of the results of 2,000 autopsies in children under 5 years. Not one presented the lesions of typhoid fever. He also quotes Dr. N. Page of the Children's Hospital in Philadelphia, who says: "I have had from 6 to 10 typhoid cases in children in the house constantly since I

came on duty here, but not one of them was under 6 years." Dr. Ch. G. Kerley observed not a single case of typhoid fever amongst 1,326 children, 85 per cent. of whom were under 2, 95 per cent. under 5 years of age; nor was a single typhoid lesion found in 410 autopsies. He adds that there was no case in the three years following his observations, under his successor in office. Again, however, Steffen reports on 148 cases of typhoid in the young; 2 were less than 1 year, 28 from the third to sixth, 34 between 6 and 9 years. Of Wolberg's 277 cases, however, the majority were as usual from 6 to 12 years old. Henoch reports on 9 cases below 2 years, 59 from 3 to 5, and 187 from 5 to 10 years—with a mortality of 12 per cent. He also reports of the finding of typhoid ulcerations 14 times in 26 autopsies. Ashby and Wright declare typhoid fever to be "not common under 3 years," while Rilliet and Taupin as early as 1840 pronounced it to be "not at all rare." About the same time Billiard published his experience. According to him typhoid fever was rare in the first year, increased slowly toward the 5th, and was quite frequent between the 5th and 15th. Maria Rivoire described an epidemic which reigned in Marseilles in 1896 and 1897 (Thèse de Montpellier 1898). In and after May of 1897 there were 105 cases amongst children of whom 21 died—20 per cent., in 1896 43 cases with 15 deaths—31 per cent. Of 1,270 cases collected during those two years there were

Below	5	years			26	..	6	deaths	=23	per	cent.
Between	5	and	10	years,	59	..	13	deaths	=22	per	cent.
"	10	"	15	"	102	..	24	"	=23.5	per	cent.
"	15	"	20	"	289	..	42	"	=14.5	per	cent.
"	20	"	25	"	347	..	63	"	=18.5	per	cent.
"	25	"	30	"	262	..	54	"	=20.5	per	cent.
"	30	"	40	"	145	..	25	"	=17.	per	cent.
"	40	"	50	"	30	..	7	"	=23.	per	cent.
Above			50		10	..	00	"	= 0	per	cent.

According to these figures the largest mortality occurred between the 10th and 15th year; the mortality of children below five, or below ten years equaled that of adults between the 40th and 50th year.

H. Curschmann (Nothnagel Spec. Pathol. u. Therap. III). reports on 451 children (250 male and 201 female) observed with typhoid fever in the Hamburg Hospital between 1886 and 1887. Of these 7 were 2, 9 were 3, 16 : 4, 18 : 5, 13 : 6, 22 : 7, 27 : 8, 44 : 9, 50 : 10, 50 : 11, 60 : 12, 71 : 13, and 64 : 14 years old. Of Brouardel's 16,036 cases observed between 1880 and 1889, 36 were 1 year and under, 1,041 under 5, 1,265 from 6 to 10, and 1,386 from 11 to 15 years old. According to an excellent report (published by Dr. I. Rudisch in the Mount Sinai Hospital Reports 1899) on 974 cases of typhoid fever which occurred from 1883 to 1898, 124 occurred in children below ten years, and 90 between the eleventh and fifteenth; a total of 214 cases. Of these 1 was 6, another 10 months of age. There were altogether below five years 37 cases, 6 of which died=16.21 per cent., and 87 between the sixth and tenth, 7 of which died=8.75 per cent. The exact figures are for the 1st year 5 cases with 3 deaths, for the 2nd, 6 with no deaths, the 3rd, 5 with no death, the 4th 10 with 1 death, the 5th 11 with 2 deaths, the 6th 16 with 2, the 7th 20 with 1, the 8th 11 with no death, the 9th 24 with 3, the 10th 16 with 1, and from the 11th to the 15th 90 cases with 9 deaths.

One of the principal points made by Dr. Northrup is that the ulcerations claimed for typhoid fever are not characteristic at all, that indeed they are found in common intestinal diseases of non-infectious nature. That is what Hervieux contended thirty years ago when he said that follicular swellings and superficial ulcerations in the intestines, and swelling of the mesenteric lymphnodes were found without any specificity in the morbid process. This observation, and the assumption of uniformity in the nature of there

ulcerations, was indeed the reason why in France, for a long time, the terms typhoid fever and dothenteritis were synonymous. But as early as 1877 C. Gerhardt emphasized the fact that the peculiar typhoid ("markige") infiltration and the formation of scurfs, which are mentioned now and then, are distinctly different from the elevations of follicular or other enteritis. It is true, however, that in many cases there is a difference between the young and the adult. The changes in the plaques in the former are more hyperplastic (they are not so in enteritis), of the adult more necrobiotic. Nowadays the presence of the bacillus typhosus in and about doubtful ulcerations would furnish another positive diagnostic sign.

Diagnosis.—It is determined by the symptoms enumerated above, and while mostly easy in the adult, it becomes more difficult in the very young. I chose to take it for granted that in doubtful cases the diagnosis of dentition and worms is nowadays confined to a certain class of illiterate women and obsequious practitioners only; but the differential diagnosis of typhoid in the very young from a catarrhal fever, or influenza, or glandular fever, even from an intestinal auto-infection may remain difficult through many days—even for the skilled. The fever curve is very apt to be irregular mainly in enfeebled children and in the presence of a complication. There are even some cases in which the disease sets in suddenly with a high temperature; there are those, however, in which a high temperature is apt to be deceptive, for I believe with A. Fairbarn (Jour. Am. Med. Ass., April 12th, 1897) that the first symptoms may be overlooked for many a day. A central pneumonia may exist half a week or more without being recognized, until the development of the disease and careful examination clears up the diagnosis. Influenza may assume the characteristics of typhoid to a certain extent. Meningitis may be recognized, if by no other symptoms, by means of

a lumbar puncture and examination of the cerebro-spinal fluid. Altogether a rather slow pulse when not in proportion to the height of the temperature, the condition of the tongue, the swelling of the spleen, and the presence of roseola render the diagnosis secure even without the diazo and Widal tests. In other instances, however, we arrive at a result by exclusion only. There is hardly a single clinical symptom which alone proves the presence of typhoid fever; the simultaneous presence of many is a more perfect guide. The diazo test is nearly conclusive when tuberculosis and pneumonia may be excluded; it may be expected to be positive in 90 per cent. of all the cases between the end of the first and the middle of the third week. The greatest difficulty is met with in those infants that yield few or no local symptoms except those of a septic infection. Lymphnodes are sometimes found tumefied; their swelling in the inguinal region, however, is so frequent from other causes, that, when found alone, it should not count. The absence of herpes should be taken as proof of the absence of typhoid fever. If we commanded a readier practical method for their discovery, the presence of bacilli in the discharges would be the best pathognomomic symptom, provided there be others which are suggestive of typhoid.

Much is naturally made of the presence of bacilli in the discharges of doubtful cases, and quite often the diagnosis had to depend on it. To what extent is this justified? There may be cases in which I should utterly refuse to accept the diagnosis of typhoid fever unless there be some one or more of adjuvant symptoms, for the same reason that makes me refuse the diagnosis of diphtheria when there is nothing but the presence of Klebs Loeffler bacilli, or that of tuberculosis when bacilli are deposited on some mucous membrane.

Prognosis.—The character and the mortality of typhoid fever are apt to vary according to seasons and epidemics.

Baginsky places the mortality at 9 per cent., Montmoullin at 8.8, Steffen at 6.7, Henoch at 7.5, Wollberg at 4.7. In hospitals it is liable to be greater than in general practice. Still, in the Children's Hospital of Philadelphia there were 137 cases, 3 of whom died (2, 66 per cent.); in the Boston City Hospital the mortality in 284 children under 15 years was 6 per cent., while amongst 3,396 adults it was 13.5 per cent., and Holt collects 2,623 children with a mortality of 5.4 per cent. On the other hand of Schavoir's (N. Y. Med. Rec. 1895) 192 patients (mostly in private practice) under 15 years, 2 died—1 per cent. Nurslings and the very young, also those approaching adolescence, are more endangered than those in the intermediate years, according to Roca (Ann. de policlin. de Bordeaux 1897) and Roemheld (Jahrb. f. Kinderh., vol. 48). High continuous temperatures are not always fatal though they be complicated with a frequent pulse; nor are petechiae absolutely ominous. A moderately slow pulse and the occurrence of marked remissions are favorable, particularly when the fever is not terminated within three weeks. This continuation beyond the usual time is quite common in the very young and when the case is apparently mild. A speedy recovery may be expected when the spleen gets smaller about the 16th or 17th day; if it remains large, the case will go on. Complications of any kind, pneumonia, meningitis, previous heart diseases with feeble peripherous circulation (cold feet) laryngeal oedema, hepatic or splenic abscesses add to the danger; that with malaria is not very dangerous provided it be recognized at an early time. Some of the complications are frequently called sequelae; but as they share the microbic etiology of the disease, they should be considered here. To this class belong erysipelas (mostly facial), otitis media, haematoma, which are sometimes very large and destructive to the implicated or superjacent cutis, arthritis, furunculosis, abscesses of all kinds, and occasionally an anaemic

dropsy not attended with an affection of the kidney the occurrence of which was first noticed by Griesinger nearly half a century ago.

Relapses are by no means rare, either after complete apyrexia, or with a moderate amount of remission about the end of the third week, or without any or much change in the temperature. They come after apparently mild or after severe cases, without or with errors in hygiene or diet; when there was apyrexia, they are mostly of a shorter duration than when the fever remains continuous or exhibits a slight remission only.

Treatment.—The food should be liquid. My invariable rule is with adults also to insist upon that demand until apyrexia has lasted ten days. The patient should be encouraged to drink water frequently; the admixture of from 8 to 12 drops of dilute hydrochloric acid to a tumbler full of plain or sweetened water is a pleasant and disinfectant drink. Of albuminoids, peptones, and "peptonoids," and of beefjuice only a certain quantity is digested or absorbed; the good that is to come from them is not from swallowing, but from digesting. The lips and tongue should be kept clean; older children will wash and gargle. When the tongue is red and dry, and fissured, one or two daily applications may be made with a clean camelhair brush of a one or two per cent. solution of nitrate of silver. The nose should be kept clean; washed out with normal salt solution in urgent cases. To guard against hypostasis of the lungs and the cord, the posture in bed should be changed from time to time.

A purgative dose of calomel in the very beginning will act beneficially; not so after the second half of the first week, when diarrhoea and hemorrhages may be caused by it. Constipation requires warm water enemata, daily; diarrhoea, frequent irrigations with water of from 95 to 100° F. When the discharges are offensive, thymol or

hypermanganate of potassium may be added in a proportion of 1: 3000-4000. Internally, bismuth, sulfo-carbolate of zinc, salol, naphthalin are indicated. Bronchial catarrh demands no special treatment in most cases; if the secretion is viscid and dyspnoea present from that cause, camphor is serviceable. Collapse requires strong stimulants, by mouth and subcutaneously; diluted alcohol, camphor in sweet almond oil 1:4, and the salicylate or benzoate of sodium and caffein, soluble in 2 parts of water, answer best for that purpose. Insomnia, great excitement and consecutive psychoses may require chloral hydrate; when the heart is feeble, croton chloral should be selected instead. When these symptoms are accompanied with heat of the head, cold applications to the head, ice water, ice-bags are soothing. The head should under such circumstances be kept as high as comfort permits. Sopor or coma should be treated with cold affusions while the body is submerged in water of 90 or 95 degrees.

Is it desirable to resort to antipyretic treatment? If so, in what class of cases, mild, medium or grave? (This latter classification, however, should not exist; for the apparently mild case may turn out to be a grave one.) Or is it desirable to allow high temperatures to persist?

The vis medicatrix naturae has been eulogized in infectious fevers. However the wholesome influence of intense body heat on bacteria and toxins has become very doubtful, and good observers like Flugge absolutely deny the new gospel of the increase of phagocytosis by high temperatures. Nor is the disintegration of tissues by heat alone successfully contradicted. Thus after all we need not enjoy the presence of high temperatures as a blessing disguised or undisguised, and should reduce them. This much is certain, that the comfort of the patient is enhanced, and grave nervous symptoms alleviated when the hot dry skin becomes

cooler and moist in proportion to the reduction of the general temperature.

Which are the means by which we can effectually obtain it? The number of antifebrile medicaments has grown immeasurably; the cautious practitioner will do well, however, not to embark in the dark sea of unknown territories guided by nothing but the flashlight advertisements of the drug manufacturer. Some of the new remedies are actual dangers. Acetanlid is a poison like all anilins; it changes haematin into methaemaglobin and thus causes the cyanosis that is so frequently noticed. Antipyrin is perhaps the safest; sodium salicylate annoys the stomach and the kidneys, which are anyway liable to suffer from the typhoid toxin alone. Quinin acts well during intermissions and remissions, not, however, when high temperatures are continuous. The cardiac stimulants, digitalis, strophanthus, spartein, camphor, alcohol which improve the general and cutaneous circulation and thereby the radiation of heat from the skin, are mighty weapons in the hands of the intelligent medical adviser, who moreover need not limit himself to the few remarks I mentioned.

These remedies, however, do not exhaust our resources; indeed they are only of minor importance. Without knowing all of it the old poet exclaimed ὕδως ἀριστὸν, the water is the best. Cold water and warm water are our most reliable and at the same time the safest antipyretics. Stress should be laid on the latter title, because many of the very apostles of hydrotherapy, perhaps influenced by shaky phagocytosis and toxin theories, belittle it in comparison with the nerve stimulating powers of water. Now cold bathing is frequently contraindicated; it is not borne when the heart is feeble from whatsoever cause, for instance, long duration of the disease, complications, with pneumonia, peritonitis, or hemorrhages, previous bad health, or excesses in the adult. No stimulants given before or

during the procedure is certain to counteract the prolonging effect on the peripherous circulation. When after a cold bath the feet remain cold, and the pulse small, it is contra-indicated and does harm. The patients in public hospitals are quite often of a low vitality and feel the cold bath as a shock; at all events most of those who arrive in the hospital after a week or two, have passed the time when the cold bath might be serviceable. Of this nature is the latest experience of I. Rudisch in the Mount Sinai Hospital (Mt. S. Hosp. Rep., Vol. I, 1899). He says: "The Brand treatment removed the mortality a little over 2 per cent. This reduction occurred in the cases which had been sick two weeks or longer, outside the hospital. Since the introduction of the Brand treatment there has been an increase in the number of cases of pneumonia and phlebitis, and a decrease in those of furunculosis and nephritis. Relapses have increased 2.5 per cent. The death rate in the relapse cases before and since the introduction of the Brand treatment is practically the same. It has not reduced the number of complicated cases as a whole, but has decreased the number of deaths from toxaemia in the causation of the mortality of typhoid fever."

This does not speak well for the indiscriminate use of cold water in hospital patients.

THE LOCAL-NON-SURGICAL TREATMENT OF THE INTESTINE IN TYPHOID FEVER.

By DeLancey Rochester, M. D., of Erie County.

In considering the subject of the local treatment of the intestine in typhoid fever two questions present themselves. First, is it desirable to treat the intestine locally? and second, is it possible to treat the intestine locally? Whether we consider typhoid fever a local disease of the intestine or a general constitutional infection with local expression usually most pronounced in the intestine—the view that in my opinion is the true one—the fact remains that the intestinal tract from the mouth to the anus is in a state of more or less pronounced catarrhal inflammation and that there is infiltration and usually ulceration of the solitary follicles and of the agminated follicles of Peyer.

In other diseases presenting inflammation of the mucous membrane catarrhal, ulcerative or fibrinous—such as the various forms of sore throat, some forms of gastritis and all forms of disease of the colon and rectum, we undoubtedly derive benefit from local treatment aimed at improvement of the anatomical condition of the part as seen in the clinical fact that this improvement is usually accompanied by amelioration of symptoms. Therefore reasoning from results in these other diseases, we are justified in concluding that local treatment of the digestive tract is desirable—if possible. When I say that such treatment is desirable, I mean only as an adjuvant to other methods of treatment—not by any means as a substitute for a plan of treatment which can reduce the death rate from 27.8 to 8.2 per cent., or from 15 to 7 per cent. as has been done by the treatment of Brand.

But to return to our second question: Is it possible to treat the digestive tract locally in typhoid? It is plainly possible to treat the mouth, the rectum and the colon locally without disturbance of the patient. In some cases in which there is marked gastric disturbance, the tube may be introduced into the stomach and gastric lavage performed with advantage. Is it possible, however, to reach the small intestine and especially the ileum—the seat of most marked anatomical lesion—with local applications of any value? To attempt to do so by the rectum is obvious folly. Can we do so by mouth? The attempt has been made with various drugs and by many observers. The drugs so used and upon the use of which any reliable statistics have been published are the mineral acids, iodine and potassium iodine, salol, salicin, sodium salicylate, chlorine water, benzo-naphthol, beta-naphthol, mercuric and ferric chlorides in combination, turpentine, guiacol and olive oil. There has also been used quite extensively a combination of podophyllin, calomel, guiacol, eucalyptol, thymol and menthol. In the cases reported as treated by this combination the diagnosis is so uncertain as to make the statistics of little, if any, value.

In the summer and autumn of 1898, I treated eight cases of typhoid with benzoate of guiacol in doses of 1 Gram every four hours day and night in addition to the regular Brand treatment. Of these cases two died with perforation of the bowel, one suffered reinfection once, and one suffered reinfection twice while still taking the drug, and the other four ran an ordinary course of fever of about four weeks' duration. One interesting fact is that the two who died with perforation of the bowel were husband and wife and that their daughter was under observation at the same time sick with typhoid, and that the treatment given her differed from that of her parents only in the absence guiacol benzoate. She recovered. Of course this is a small number of cases,

but the results discouraged us from pushing the investigation further.

From a careful review of the literature of the subject, I am forced to the conclusion well expressed by Dr. H. A. West, of Galveston, that "there is no evidence to prove the potency of any medicine for the destruction of the pathogenic agent in the intestinal canal when given in doses which would not be toxic to the infected person." Before becoming enthusiastic over the value of any drug or combination of drugs in the treatment of typhoid fever, it is well to call to mind the report by Cotting of Boston, before the adoption of the Brand treatment quoted in Flint's "Practice," of 307 consecutive cases of typhoid, treated without drugs, with a death rate of only 10 per cent., as well as the remarkable results obtained by everyone who uses a rational hydrotherapy according to the method of Brand.

Nevertheless so much can be done in the improvement of the condition of the patient by rational local treatment of the intestine as an adjuvant to the Brand method that it ought not to be neglected. First of all, remembering the diversified flora of the mouth in bacterial growths, our attention should be directed towards a proper cleansing of it. In my student days and in the early years of my practice—before I had begun to think for myself—it was the common thing to see the tongue of a typhoid patient fissured and covered with a thick brown coating, and the teeth and gums loaded with "sordes" filth. Now it is the rare exception to see the mouth turned into such an Augean stable. Why? Because we treat the mouth locally, cleansing it from four to eight times in the twenty-four hours. For this purpose a swab is necessary and a spray helps. One of the best and most agreeable mouth washes consists of a combination of dilute phosphoric acid, lemon juice, glycerin and water. Spraying the nose once or twice daily with a simple cleansing wash, such as Dobell's solution, aids in keeping the mouth

and pharynx in a clean condition. In most cases of typhoid local treatment of the stomach is unnecessary, but where nausea and vomiting are marked, careful and persistent lavage until the washings are clean and free from mucus and food is of the greatest value.

Necessarily I cannot refer to the local treatment of the intestinal tract without reference to the diet. Since the publication of Dr. Shattuck's views on diet in typhoid in which he recommends other articles than milk during the activity of the fever and the administration of solid food rather earlier than is usual I have followed his suggestions in a few cases, but with fear and trembling in each case, and every time with sorrow. My cases, however, have not been sufficiently numerous for me to speak with authority on the subject and I am open to conviction. At present in my cases milk forms the only article of diet. I usually prescribe it peptonized, and to be administered while the peptonization is in active process, but before it becomes bitter to the taste. If curds still appear in the stool, I order it completely peptonized before administration. The disagreeable bitter taste of peptonized milk can be overcome by the addition of 15 to 30 cc. of strained orange juice to 150 or 200 cc. of the milk. The milk should be administered every two hours from 4 a. m. to 10 p. m. and at 1 a. m. Occasionally the milk has to be diluted and may be rendered palatable by the addition of carbonated water at the time of taking. Complaints of fulness in the stomach after the milk or even evident gastric distension is frequently relieved by the administration of dilute hydrochloric acid or nitro-hydrochloric acid, well diluted with water, twenty minutes after each dose of milk. Lime water in the milk may be tried, but in my experience has been of little value.

If after these various measures have been tried, nausea or vomiting persists, the stopping of food by the mouth for twelve or twenty-four hours is sometimes advisable. Dur-

ing such cessation of mouth feeding I administer minute doses of calomel and cerium oxalate in combination every half hour for four or five hours. This seems to have a sedative effect upon the gastric mucosa and starts peristalsis in the proper downward direction. An abundance of pure water is an important part of the dietary of every fever patient and particularly of those suffering with typhoid fever. Distilled water is best and can be rendered palatable by being aerated with sterilized air. Such water can be obtained in most of the large cities. As a substitute, water filtered through a properly kept Pasteur filter or boiled water with a slight mixture of carbonated water can be used. Boiled water may be rendered palatable by the addition of a little lemon or orange juice. It is better to administer the water in 100 or 150 cc. doses at regular intervals between the doses of milk rather than to let the patient take more frequent small sips.

If the above precautions as to mouth, stomach and food have been taken, it is relatively rare that great disturbance occurs in the small intestine. Nevertheless there are cases in which marked intestinal tympanites occur apparently from distension of the small intestine. For this condition the administration of 0.25 to 0.50 Gm. of calomel has usually proved efficacious. Sometimes it fails. Under such circumstances nitro-hydrochloric acid and turpentine have given me the best results. At this point I wish to put myself on record as advocating the regular use of calomel in laxative doses at intervals of from four to six days during the course of typhoid fever. My own observations differ from those of Graves and Osler and coincide with those of Louis, West, Upshur and Thistle, that a moderate degree of diarrhoea—two to four movements in the twenty-four hours —is better for the patient than even a moderate constipation.

Of equal importance with the cleanliness of the mouth and nose, the care of the stomach and small intestine, and the selection and preparation of the diet, is the daily or twice daily washing of the colon. The colon in all cases of typhoid is in a condition of catarrhal inflammation and in the caecum and ascending colon there is often infiltration and ulceration of the follicles. The washing serves the purpose of removing excreta and other toxic materials, of allaying local inflammatory conditions and tends to prevent colonic tympany.

For the purpose of the colon wash a soft rubber colon tube is used and 2000 to 5000 cc. of boiled water, plain or holding in solution either boric acid or borax or common salt, is allowed to moderately distend the colon and then escape. If the temperature of the patient is very high this wash may be used ice cold with excellent results.

For the treatment of hemorrhage from the bowels absolute rest is necessary and this is best procured by cessation of bathing and the administration of morphine hypodermically.

The ice-water coil or small bags of crushed ice applied to the abdomen and, if the haemorrhage is accompanied by hyperpyrexia, the packing of crushed ice into the rectum are all procedures of value. The only drugs internally administered in this condition that have proved of value in my hands are turpentine and gallic acid. If there is much tympanites the turpentine is of greater value. If the tympanites is evidently colonic the injection of turpentine through the colon tube and the leaving of the tube in the colon to facilitate the escape of gas have frequently been followed by marked improvement. The use of subcutaneous injections of normal salt solution in the collapse following haemorrhage does not properly belong to the local treatment of the intestine, but while speaking of haemorrhage I cannot refrain from mentioning the value of this procedure.

In perforation of the bowel the prognosis is most serious and while some cases have recovered under the prompt and continuous administration of large doses of morphine, prompt surgery promises better results than any other therapeutic measure, and I cannot do better than leave the subject in the hands of Dr. Keen.

SURGICAL TREATMENT OF PERFORATION OF THE BOWEL IN TYPHOID FEVER.*

By W. W. Keen, M. D., LL.D., Philadelphia.

In the brief limits allowed to this paper, among so many others, it is impossible to discuss more than the treatment of perforation of the bowel in typhoid fever. The diagnosis of this serious complication, which is equally, if not more important, must, unfortunately, be omitted. What I have to say may, perhaps, be best stated in answer to four questions.

1. *Shall we operate at all?* This question can now be answered absolutely in the affirmative. Thirteen years ago, when Prof. James C. Wilson and I first discussed the advisability of operation in a case of apparent typhoid perforation, not a single case had been operated on in America, and only one in Europe, by Mikulicz, and of this we were ignorant. Then, the question was debatable; now, experience has given us a positive solution.

In my book on the "Surgical Complications and Sequels of Typhoid Fever," published early in 1898, I published a table by Dr. Thompson S. Westcott, in which he collected for me 83 cases of operation, of which 67 died and 16 recovered, a recovery rate of 19.3 per cent. Appended to this present paper is a continuation of that table up to the present time, compiled by Dr. Martin B. Tinker, containing 75 additional cases, of which 54 died and 21 recovered,[1] a recovery rate of 28 per cent., a gain over the rate of the first 83 cases of almost 40 per cent. The recovery rate of the

*Read in the Discussion on Typhoid Fever, at the meeting of the New York State Medical Association, held in New York city, October 26, 1899.

[1]I count Case 95 as an operative recovery. Possibly Case 154, which survived nine days, might be so classed, but to be on the safe side I classed it as a death.

entire 158 cases is 23.41 per cent. The list includes cases operated on many hours and often many days after perforation presumably took place. If all physicians were alive to the fact that the healing process after operation during typhoid progresses just as well as if there were no typhoid and were alive to the good results of operation, and especially if they called the surgeon promptly, I do not doubt in the least that the recovery rate would be 30 per cent., or possibly even one in three. Twenty-eight per cent. is within hailing distance. In sombre contrast to this is the estimate of Murchison, that the recovery rate in unoperated cases is only 5 per cent., and Fitz states that 83.4 per cent. die within the first week, 37.3 per cent. even within the first day.

The papers of Cushing and Finney and my book in America, and the papers of Platt, of Monod and Vanwerts, and of Gesselewitsch and Wanach in Great Britain, France and Russia, respectively, have, evidently, borne good fruit.[2] From 1884, when the first operation was done, to January, 1898, 14 years, only 83 cases were reported. Two years have added 75,—158 in all. Of the whole number, 97 are reported by American surgeons (including Canada) 21 by British and 15 by Russian surgeons.

2. *In what cases shall we operate?* To this I would answer, practically every case of perforation, unless the condition is such that recovery is evidently hopeless. The better the general condition, the better the prospect of cure, and perforation occurs quite as often in mild cases as in severe, and possibly even more frequently. One case was operated on twice (87) with a fatal result; one case (90) three times, and yet recovered. The operation has been followed, as is possible after any abdominal section, by intestinal obstruction. Cushing's case (90) and Finney's (107) were operated

[2]References to these papers will be found in the table of cases. I must express my obligations to Dr. Finney for advance sheets of a paper on the same subject, soon to appear in the Johns Hospital Reports, vol. viii.

on for such a post-operative obstruction, and both recovered. C. B. Porter's patient (132) died of an unrelieved obstruction; possibly a second operation might have averted death. Finney's remarkable one (68) of seven later complications, yet happily resulting in recovery, encourages us never to despair.

No *age* is a barrier, yet, as the subjoined table—derived from the entire series of 158 cases—shows, age apparently has considerable influence on the recovery rate:

TABLE OF RECOVERIES AND DEATHS WITH REFERENCE TO AGE.

Age.	Recovered.	Died.	Recovery Per cent.
Under 15	7	6	53.84
15 to 25	4	39	9.30
26 to 35	10	33	23.26
Over 35	6	14	30

This shows that from 15 to 25 is the most unfavorable time to operate, while the most favorable is over 35, and especially under 15.

Again, *sex* seems to have considerable influence on the mortality rate, so far as can be judged from 158 cases. In my table the sex is mentioned in 125 cases, of which 106 were males and 19 females—84.8 per cent. of males. This preponderance of males would be even greater were military and naval surgeons alive to the possibilities of saving life in this perilous condition. I have been informed of a considerable number of such cases dying without operation during our late war with Spain. Of the males, 85 died and 21 recovered, a recovery rate of 18.1. Of the females, 11 died and 8 recovered, a recovery rate of 42.1 per cent. In other words, while the number of operations in males has been over five times as many as in females, the recovery rate of females has been over twice that of males.

Again, I have analyzed the recovery rate in the various *weeks of the disease.* The third week gives, as is well known, the largest number of cases of perforation, the second following close upon it. As is seen by the subjoined table, the

mortality rate of these two weeks is by far the worst, yet even these two weeks yield a recovery rate of over 16 per cent., more than three times that of unoperated cases, and in the fourth week this recovery rate is doubled:

TABLE OF RECOVERIES AND DEATHS WITH REFERENCE TO THE WEEK OF THE FEVER.

Age.	Recovered.	Died.	Recovery Per cent.
First week	2	1	
Second week	5	22	18.57
Third week	8	42	16
Fourth week	4	8	33.3
Fifth week	1	5	
Sixth week	14	2	
Seventh week	2	3	
Eighth week		1	
Ninth week		1	
Eleventh week	1		

The numbers in the second, third and fourth weeks are the only ones large enough to make the percentages of value.

3. *When shall we operate?* Next to the first question, which I regard as settled, this is the most important to be considered. As exception has been taken, especially by Cushing and Taylor, to my views as set forth in my book, I may be permitted to quote precisely what I wrote: "First, the time of operation should be wisely chosen. The best time is not during the immediate primary shock which lasts during the first few hours. Happily, in fact, it is very rarely the case that operation can be done within several hours after perforation, since, the case being under the care of a physician, it requires time to obtain a consultation with the surgeon, and, when the diagnosis has been reached, still further time must elapse before suitable preparations for operation can be made. The table on page 227 [of my book] shows that the *second twelve hours after perforation, all things considered, has been the most favorable up to this time.* Abbe well says that it is essential that 'the surgeon should never be so hasty in getting at his work that he enters upon it handicapped by poor assistants, poor light, poor arrange-

ments for irrigation and sponging, or inadequate plans for restoration from shock.' *The earlier the moment at which the operation can be done after the immediate shock of the perforation, provided, of course, there has been any, as is sometimes not the case, the better it will be for the patient. Every hour then counts, since the infection of the peritoneum becomes more diffuse and more intense.*[3]"

Looking carefully at what I said, it is hardly just, it seems to me, for Cushing to say: "it is hard to understand Dr. Keen's advocating delay until symptoms of shock have passed away and *his preference of the second twelve hours* for operating, when one appreciates that extravasation, perhaps of virulent organisms, is with all probability continually taking place while we are waiting." Taylor says: "I believe, to be successful, the abdomen should be opened at the earliest possible moment after the diagnosis is made and that no delay whatever should be permitted for reaction, or, indeed, for any purpose whatever," and again, "I do not believe it wise to wait for reaction, as Dr. Keen suggests, for the shock and lowered temperature is due to the large amount of septic material in the abdominal cavity and to the resulting purulent peritonitis, and not to the shock of perforation of the bowel. The fact that the greatest number of recoveries occurred when the operations have been performed within the second twelve hours only carries out this contention. They are, as a rule, the cases where the perforation is small and the onset of the peritonitis slow."

I think that what I wrote may be fairly summarized in two rules: (1) operation should be done as soon as possible after perforation; (2) but no prudent surgeon would operate in perforation any more than in any other condition during profound shock. I did not state that I "*preferred* the

[3]The italics are used here to call attention to my position. I have also corrected an unpardonable grammatical error which escaped my eye in the proof-reading.

second twelve hours," but only that "*all things considered,* this has been the most favorable *up to this time.*"

Let us appeal again to the facts. In the subjoined table I have made a more minute analysis of the influence of the time of operation on the rate of recovery than in my book, and, on consulting it, we see that the recovery rate in the first four hours is 25 per cent.; from four to eight hours, 8.33 per cent.; and for all cases operated on within the first eight hours the average is 15 per cent. In the third four hours, from eight to twelve, the recovery rate is 25 per cent., which is still below the recovery rate of operations done from eight to twenty-four hours, which is 29.09 per cent.; or in the second twelve hours, which is 30.76 per cent.; after twenty-four hours the recovery rate falls to 16.63 per cent.:

TABLE SHOWING RECOVERY RATE OF OPERATION ACCORDING TO THE NUMBER OF HOURS AFTER PERFORATION OCCURRED.*

	Died.	Recovered.	Percentage of recoveries.			
Under 4 hours	6	2	25.	19.44	15	25.33
4 to 8 hours	11	1	8.33			
8 to 12 hours	12	4	25.		29.09	
12 to 18 hours	17	8	32.	30.76		
18 to 24 hours	10	4	28.57			
Over 24 hours	38	6	13.63			
Not given	27	12	30.74			
Total	121	37	23.41			

These figures, so far as the number of cases justify us in drawing a conclusion, certainly carry out the statement which I first made. It should be modified, however, to read that during the first eight hours, the chances of recovery are only about one-half of that which obtains during the rest of the first twenty-four hours.

*Cases operated on "8" hours, "12" hours, &c., after perforation are included respectively under "4 to 8" hours, "8 to 12" hours, &c.

It is to be remembered that most of the operations done under four, or even eight, hours must have been in hospitals, for in a private case it is practically impossible to summon the physician and then the surgeon, make preparations and do the operation in so short a period after the perforation has occurred. Moreover, the patients operated on in hospitals have not only facilities which do not exist in any private house, even the best, but they would have the services of men on the hospital staffs, on the whole more skilled than many of those who operated on other cases, yet the mortality rate is almost twice as great in the first eight hours as in the next sixteen hours.

I am convinced that this is due to shock. If there be no shock or it is only slight, no surgeon would allow the contents of the intestine to flow into the abdominal cavity for a moment longer than is possible, but if there be shock and, especially grave shock, I believe it to be the duty of the surgeon to wait for a reasonable time for at least a partial recovery from that serious condition. I can not agree with Taylor when he states that the shock is due to sepsis and not to the perforation. Thus Fitz states that of 80 cases, the onset of the symptoms was *sudden* in 56, while in 15 they were gradual or latent, and in 5 there were none. Finney says: "where marked symptoms of shock and collapse were present at the time of operation, the prognosis was distinctly influenced for the worse," and again, "the signs upon which most dependence is to be placed are sudden pain in the abdomen with symptoms of collapse accompanied by an abrupt fall in the temperature, it may be even several degrees." All that we know of shock, it seems to me, corroborates this view. How many of us have seen the serious shock produced by a finger pinched in a door, or other similar accident in which the element of sepsis cannot possibly enter. Look at the records of perforation in gastric ulcer and see in how many such cases, similar to

those of typhoid perforation, the patients fall down in collapse. It is the pain of the perforation and extravasation and not the sepsis which produces the initial shock. The first moment possible after this has subsided is the time to operate. Were it due to sepsis, then the initial shock should be slight and should steadily increase with the increasing sepsis; but as a matter of fact the initial shock is the greatest and is followed by more or less subsidence of shock.

Taylor's view that the shock is due to the size of the opening, and, therefore, to the rapidity of extravasation, while theoretically true, is scarcely substantiated by a reference to the tables. This point not having been in mind when the tables were made, the size of the opening is not noted in each individual case, but I find 54 cases in which the size is stated. I have tabulated those as "large" openings that were larger than a lead pencil (about a quarter of an inch) and as "small," of lead-pencil size or less. I find that in 25 cases with large or multiple openings, the deaths were 19 and the recoveries 6, a recovery rate of 24 per cent.; in 29 cases of small openings, the deaths were 20 and the recoveries 10, an operative recovery rate of 33 per cent., or 9 per cent. more.

It is possible that larger statistics, by changing the facts, will change my views to some extent, but I doubt if operations done during the presence of severe shock will ever prove as successful as those undertaken as quickly as possible after primary shock has passed away.

On the one side is the shock, on the other the increasing infection of the peritoneum. He will be the best surgeon, as he is the best sailor, who avoids both Scylla and Charybdis.

To avoid both of these dangers, if possible, Cushing has proposed to operate in what he terms the "preperforative" stage. Should it ever prove possible accurately to diagnosticate the preperforative stage, that, unquestionably, will

be the most favorable time for operation. I quite agree with Finney in his belief that so far as operative technique is concerned—with the exception of one point to be alluded to a little farther on—we have probably progressed nearly as far as we ever shall. Our future increased success will depend far more on our accuracy of early diagnosis, and especially if it should prove possible accurately to diagnosticate an impending rather than an actual perforation. I would urge most strenuously, therefore, that, as in appendicitis, the surgeon should be called in at the earliest moment when any abdominal symptoms indicate possible perforation. Preparations can then be made beforehand and, should the symptoms call for it, an exploratory operation should be done after the fashion proposed by Finney. These, I think, are the two most distinct advances that we have made in the last two years in the treatment of typhoid perforation; viz., the possible diagnosis of an impending perforation, followed by immediate operation and exploratory operation under cocaine.

4. *How shall we operate?* As already indicated, the most important recent advance in the technique is the use of cocaine instead of a general anesthetic. This was first used by Cushing in two cases. In a personal letter to me he reinforces his suggestion and says: "I think local anesthesia is a great step in advance. I shall never use general narcosis again in typhoid." To this Finney adds the suggestion "that in any case in which the diagnosis is obscure and there is reason to suspect the existence of a perforation, a small incision be made under cocaine anesthesia . . . and that cultures be taken from the abdominal cavity. . . . . This exploratory incision would be followed by very little disturbance to the patient and very slight risk. If the presence of a septic peritonitis is determined, this incision can be enlarged and the operation for the relief of the perforation and peritonitis can at once be carried out."

Still more, if we can diagnosticate the preperforative stage and anticipate both shock and sepsis, we shall have made an important further step in advance.

A very brief summary will be sufficient to indicate the further technique. The incision would be best made in the right linea semilunaris, or through the rectus muscle. If such a general peritonitis be present that this will not enable us thoroughly to cleanse the abdominal cavity, a second incision may be made in the left iliac fossa.

The perforation should be sought: 1, in the ileum; 2, in the adjacent cecum and appendix, and 3, in the sigmoid, where it occasionally occurs. One case of perforation in Meckel's diverticulum (109) has been reported. When found, the perforation should be sutured without paring the edges, which is both a loss of time and tissue, and also involves possible hemorrhage, to arrest which more time must be consumed. All of the thinned area should be included in the suture. The occasional wide extent of this area is well shown in Plate V in my book. The suture should not be continuous, but Halsted's mattress suture. If a second row of sutures is deemed necessary, this may be continuous, as it saves time. The amount of inversion of the bowel must not be such as seriously to impair the lumen of the gut. Should the perforation be very extensive, or should two or more adjacent perforations render it necessary, a resection and anastomosis of the bowel may be made. Of 7 cases of resection, 3 (31, 403 and 124) recovered. Should there be found other points of impending perforation, these should be sutured as a preventive measure. Some patients who apparently should have recovered, have been lost by a later perforation; 2 died from subsequent hemorrhage (100, 139). In 5 the appendix was removed without a recovery.

The cleansing of the peritoneal cavity is one of the most important steps in the operation. Unless this is thoroughly

carried out the operation will certainly prove futile. Whether it shall be done by flushing or wiping or both must be decided by each operator at the time.

Drainage in most cases will be necessary, but I quite agree with Finney that "many cases in which we have heretofore been accustomed to drain would recover more promptly without it. . . . If the inflammatory process has not been of too long standing and the peritoneal cavity can be at all satisfactorily cleansed, it will be better to fill the cavity with salt solution and close the wound." Of seven cases not drained, two recovered.

Speed in operation is an important factor in recovery, as would naturally be supposed in cases which are so unfavorable in consequence of the existing fever and its concomitant exhausion. Only one case (107) in which the operation lasted an hour or over was followed by recovery. A number have been done in from seventeen to thirty minutes. On the other hand, in our anxiety to complete the operation quickly, we must never sacrifice thoroughness, both of closure of the perforation and of cleansing the peritoneal cavity.

One criticism by Cushing, of a statement in my book, I feel is just. I said: "I can scarcely think that we would ever be justified in reopening the abdomen. . . Possibly a very exceptional case might justify such a procedure, but a typhoid patient rarely escapes with his life even after one operation and could not be expected to survive a second. The same remark would apply to any new perforation which might occur. Such cases must, unfortunately, be left to their fate." The experience in Cushing's first case in which three operations were done and yet recovery followed, and the extraordinary vitality exhibited in Finney's third case "who, subsequent to the operation, suffered two relapses, one of great severity, a suppurating otitis media, a left sided pleurisy, a right sided femoral phlebitis, a severe

neuritis of both legs and the painful toes so common after the cold bath treatment," and his fifth case, " who, on the twenty-second day was again operated upon for relief from obstruction of the bowels," show that we ought never to despair of any case.

CONCLUSIONS.

My views on the operative treatment of typhoid perforation may be summarized, therefore, as follows:

1. The surgeon should be called in consultation the moment that any abdominal symptoms indicative of possible perforation are observed.

2. If it be possible to determine the existence of the preperforative stage, exploratory operation should be done under cocaine anesthesia before perforation, shock and sepsis have occurred.

3. After perforation has occurred, operation should be done at the earliest possible moment, provided:

4. That we wait till the primary shock, if any be present, has subsided.

5. In a case of suspected, but doubtful perforation, a small exploratory opening should be made under cocaine to determine the existence of a perforation, and if hospital facilities for a blood count and for immediate bacteriologic observation exist, their aid should be invoked.

6. The operation should be done quickly, but thoroughly and in accordance with the technique already indicated.

7. The profession at large must be aroused to the possibility of a cure in nearly, if not quite, one-third of the cases of perforation, provided speedy surgical aid is invoked.

No.	Operator and Reference.	Age and Sex.	Location and Character of Lesion.	Day of the Disease.	Interval Between Perforation and Operation.	
84	Abbe, R. Personal communication.	M. 29	Two perforations of ileum; one 8 in. from ileo-cecal valve; the other 14 in. from valve.	During 2nd week of a relapse.	7 hours.	Median col jected; a reopening
85	Abbe, R. Personal communication.	M. 30	Perforation 1½ feet from ileo-cecal valve.	Typho-malarial fever for 8 weeks.	12 hours.	Abdominal drainage
86	Anderson, A. R. Handford & Anderson Brit. M. J., 1898, II, 220.	M. 27	Within 3 feet of cecum; hole size of a bean.	Probably 33d day.	22½ hours.	Incision 4 i gested a by loop-a
87	Beach, Fitz & Beach, Boston Med. and Surg. Jour., 1898. cxxxix, 389.	M. 15	Short distance from cecum.	During 3d week.	.....	Incision 8 i from ile bolled w minutes, perforat
88	Beckett, W. W. So. California Prac., 1899, xiv, 111.	F. 22	Loop of small intestine in Douglas cul-de-sac; opening small.	22d day.	24 hours.	Abdominal ing with
89	Bigger, E. C., and Campbell, R. Brit. Med. Jour., 1899, I, 89.	M. 36	Two feet from cecum, ½ inch from mesenteric attachment; about size of a pea.	About first of 3d week.	10½ hours.	On openin lymph; gation w
90	Cushing, H. W. Johns Hopkins Bull., 1898, ix, 267.	M. 9	Two operations; first, perforation about 2 mm. in diameter; about 25 cm. from cecum in free surface of bowel; 2nd, perforation few cm. beyond first perforation; thinned Peyer's patches seen at first operation.	1st perforation end of 2nd week; 2nd perforation 14 days later.	4 hours.	1st operati jected, n was clos only 12 i laparoto omentum silk; gau
91	Cushing, H. W. Johns Hopkins Bull., 1898, ix, 267.	M. 13	First loop of ileum 3 large ragged holes about 1.5 cm. in diameter.	Fifth week.	Probably 36 hours or more (personal).	Cocain an like pen perforati drainag
92	Cushing, H. W. Johns Hopkins Bull., 1898, ix, 267.	M. 31	About 10 cm. above cecum.	Fourth week after prolonged abdominal symptoms.	Possibly 24 hours (personal).	Incision fi ileum dis sutures;
93	Cushing, H. W. Personal.	M. 25	8 inches (20.4 cm.) above cecum.	.....	5½ hours.	Perforati
94	Cutler, E. G. & J. W. Elliott, Per. Med. Rec. 517, Mass. Hosp. Rec. *	M. 19	Ileum 4 feet above cecum.	Last of 2nd or beginning of 3d week.	4 hours.	On openin intestin
95	Dalton. Med Rev., St. Louis, 1898, xxxvii, 392. Proceedings of the St. Louis Med. Soc.	.....	.....	14th or 15th day.	.....	.....
96	Dalton. Med. Rev., St. Louis, 1898, xxxvii, 392, Proceedings of the St. Louis Med. Soc.	.....	2 perforations 6 or 8 inches above ileo-cecal valve and 2 feet above.	.....	.....	Perforatio
97	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	.....	.....	.....	26 hours.	Median in
98	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	.....	.....	.....	.....	Median in
99	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	M. 24	3 perforations, in last 18 inches of bowel; general plastic effusion.	End of 2nd week.	16 hours.	Median in
100	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	M. 16	.....	End of 2nd week.	13 hours.	Median in
101	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	.....	.....	.....	36 hours.	Median in
102	Dalziel, T. K. Personal to Prof. Wm. Osler. Courtesy of Prof. J. M. T. Finney of Johns Hopkins University.	F. 13	.....	Probably in 4th week.	11 hours.	Median in
103	Deaver, J. B. Transactions Col Phys., Phila., 1898, 3 s., xx, 9.	M. 27	Not located.	About middle or end of 2nd week.	Perforation took place after dinner. Operation next morning; probably 12 or 18 hours.	Free g thoroug
104	Deaver, H. C. Transactions Col. Phys., Phila., 1898, 3 s., xx, 9. Report by J. B. Deaver.	M. 36	Pin-hole perforation in ileum.	In the 3rd week.	36 hours.	Pus found
105	Deaver, J. B. Annals of Surgery, Phil., 1898, xxviii, 144.	F. 23	7 inches from ileo-cecal valve, opposite mesentery.	21st day.	15½ hours.	Median in wash o
106	Finney, J. M. T. Personal. To appear in Johns Hopkins Hospital Reports.	M. 12	About 2 feet (61 cm.) from ileo-cecal valve.	During 2nd or 3rd week.	About 3 days.	Incision in lymph el
107	Finney, J. M. T. Personal. To appear in Johns Hopkins Hospital Reports.	M. 26	Ragged perforation about 4 mm. in diameter, about 50 cm. from ileo-cecal valve.	During 3rd week.	20 hours.	Right in forate in drain fo
108	Gray, F. D. N. Y. Med. Record, 1899, lv. 566, case ix.	M. 44	Lower part of ileum.	During 6th to 8th week of walking typhoid.	48 hours.	Incision ov gener hydro-en
109	Heuneld. Med. Rev. St. Louis, 1898, xxxvii, 392. Rep. by Lutz in Proc. of St. Louis Med. Soc.	.....	Perforation in Meckel's diverticulum.	.....	.....	Closure
110	Jackson, Thos. W. N. Y. Med. Record, 1899, lvi, 519.	M. 26	In small intestines; ¼ inch in diameter.	Wk. after entering hospital about end of 2nd week.	About 3 days.	Incision ov besion be packe
111	Kropowski. Gesselewitsch, St. Petersb. Med. Woch., 1898, n. f. 15, xxiii, 23.	.....	.....	.....	.....	.....
112	Lund, F. B. Personal to Prof. J. M. T. Finney of Johns Hopkins Univ.	M. 38	Punched out perforation ¼ inch (6 mm.) in diameter, 8 inches (20.3 cm.) from ileo-cecal valve.	During 3rd week.	12 hours.	Incision in full ver sutures chos. thr
113	Lutz. Med. Rev., St. Louis, 1898, xxxvii, 392.	.....	.....	.....	.....	Lutz ...ed
114	Proc. St. Louis Med. Soc.	.....	.....	.....	.....	forate u
115						
116	Margarucci. Bull. d. Societa, Lancisiana d osp. di Roma, 1898, xviii, 319.	F. 50	In the ileum a short distance from the cecum.	Probably during 2nd wk. (about 10 d. after entering hospital).	16 hours.	Abdomen o sion, ster equipmen pels lu
117	Martin, E. University Med. Mag., 1899, xi, 502.	M. 12	Lower part of ileum, probably not far from the ileo-cecal valve.	About the latter part of 3rd week.	33 hours.	Incision fibrin as sponge, last ...
118	Martin, E. Univ. Med. Mag., 1899, xi, 502.	.....	Ileum.	.....	Perforation had probably existed several days.	Operation perit
119	Moore, J. E. Northwestern Lancet, 1898, xviii, 138.	F. 30	About 1½ feet above ileo-cecal valve near mesenteric attachment; opening had punched-out appearance.	Third week.	4 to 6 hours.	Median in some ...
120	Moynihan. Brit. M. J., 1899, I, 1097. Proceedings Leeds & W. Riding Med. Chir. Soc.	M. 16	.....	About last of 3rd or beginning of 4th week.	About 24 hours.	Median inci forate u gener
121	Munro, J. C. Personal to Prof. J. M. T. Finney of Johns Hopkins Univ.	M. 30	In a loop of ileum.	During 4th week.	4 hours.	Right ... with tom
122	Munro, John C. Reported by Burrell and Bottomly, Boston City Hosp. Rep. 1898, 126.	M. Adult.	Not found.	About the 11th day.	3 days.	Incision ha pus ...
123	Netschaieff and Troianoff. Tetrophe rousskoi	M. 30	Ileum.	Had been in hospital 10 days.	.....	On ...

RFORATION IN TYPHOID FEVER, PREPARED BY DR. MARTIN B. TINKER. *

EN ERATION.	OPERATION.	RESULT.	REMARKS.
	Median cellotomy; abdominal cavity filled with greenish turbid extravasation and all small intestine injected; suture of openings; saline irrigation; glass drainage tube into pelvis. Upper opening in bowel reopening and stitched into wound with rubber tube draining it for relief of intestinal contents.	D	Patient a soldier grom Cuba, exhausted by long camp illness and hardships. Died 11 hours after operation.
	Abdominal cavity fouled by intestinal contents and general peritonitis; suture of perforation; irrigation; drainage from pelvis by glass tube and gauze.	D after 3½ days.	Patient a soldier from Cuba, exhausted before operation. Died 3½ days after operation.
	Incision 4 inches long below umbilicus in median line; gas and feculent matter escaped; intestines congested and covered with lymph; perforation closed with silk Lembert sutures; intestine pulled out loop by loop and wiped with sponges saturated in bichlorid sol. 1-2000, abdomen closed without drainage.	R	Renal complications delayed recovery. Wound healed several weeks at time of report.
.....	Incision 3 inches in median line; escape of gas and fecal fluid; flakes of fibrin on intestines; feces pouring from ulcer which was closed by Lembert sutures at right angles to axis of intestine; flushing with hot boiled water; hot salt solution left in abdomen, which was closed without drainage; operation lasted 30 minutes; 8 days later reopened wound, evacuated pint of fecal fluid coming from ulcer near cecum; closed perforation with Lembert sutures; flushed with hot water; gauze drainage.	D	Condition fair after first operation; then several bloody stools; stitch abscesses. At 2nd operation former suture found in good condition; gradually failed and died same afternoon. Necropsy showed large necrotic area in cecum, many ulcers lower 3 feet of ileum.
	Abdominal cavity distended with gas; general peritonitis; perforation closed with Lembert sutures; flushing with normal salt solution; gauze drainage.	D	Death from general peritonitis 24 hours after the operation.
	On opening abdomen gas and yellowish fluid escaped; intestines injected and covered with patches of lymph; perforation closed with 2 rows Lembert sutures; coils of intestine and pelvis sponged clean; irrigation with boiled water; glass drainage tube from lower part of abdomen.	D	Died during 4th day after operation.
	1st operation. Median laparotomy below umbilicus; sero-purulent fluid in peritoneal cavity; serosa injected particularly in right iliac fossa; fibrinous deposit in ileum; feces flowing from perforation, which was closed by circular suture, the silk; irrigation with salt solution; gauze drainage. Second laparotomy 12 days later; no cause for symptoms of apparent perforation found; closure with drainage. Third laparotomy 2 days later for intestinal obstruction; no peritonitis; obstruction from kink in adherent omentum; second perforation at site of kink found and sutured with single purse-string suture of fine silk; gauze drainage. Operation lasted 20 minutes.	R	Patient rallied well after first operation but fecal fistula developed on 2nd day; discharged for few days. After 2nd operation condition not materially affected. After 3d operation, distention, peristaltic cramps, serious condition; typical typhoidal condition for 10 days, convalescence tedious; abscesses over back and shoulders incised; broke down and slow healing, but ultimate recovery.
ore per-	Cocain anesthesia. Incision through right linea semilunaris; rush of gas followed by escape of stinking fluid like pea soup stools; bowels bluish, distended, covered with lymph and fecal extravasation; suture of perforations with Halsted mattress sutures; cleansing abdominal cavity and irrigation with salt solution; drainage of pelvis and at seat of suture.	D	Rallied somewhat under stimulants and salt infusion, but died 4 hours later.
al).	Incision through right rectus; escape of gas and sero-purulent fluid on opening abdomen; serosa injected, ileum distended and covered with fibrinous lymph; perforation and thin patch turned in with Halsted sutures; wiping, irrigating, drainage of pelvis and site of suture. Operation lasted 30 minutes.	D	Stood operation fairly well, but died 8 hours later, apparently of acute general toxemia.
	Perforation and two thin Peyer's patches inverted and sutured; operation under cocain anesthesia.	D	General peritonitis; death 3 days later second operation.
	On opening abdomen considerable slightly cloudy serous fluid in abdominal cavity; some serous flakes on intestines; gut folded longitudinally and sutured by two rows of Lembert sutures; small wick of gauze.	R	Relapse of fever 7th day after operation lasting about 16 days; good recovery, man now perfectly well.
...	.....	R +	Urgent symptoms (collapse, pain, rapid pulse, etc.), disappeared after operation; patient had regular course of typhoid fever and died from the fever on 34th day. Necropsy showed wound nicely healed.
.....	Perforation nearest ileo-cecal valve was closed; second perforation overlooked.	D	Died from shock; second perforation found at necropsy.
	Median incision; irrigation of peritoneal cavity; parts gently dried; drainage.	D	In extremis at time of operation.
.....	Median incision; irrigation of peritoneal cavity; parts gently dried; drainage.	D	In extremis at time of operation.
	Median in sion; irrigation of peritoneal cavity; parts gently dried; drainage.	D	
	Median in sion; irrigation of peritoneal cavity; parts gently dried; drainage.	D	Would probably have had a good chance but for hemorrhage the day after operation.
	Median in sion; irrigation of peritoneal cavity; parts gently dried; drainage.	D	In extremis at time of operation.
	Median in sion; irrigation of peritoneal cavity; parts gently dried; drainage.	R	Mild attack, condition good; day after operation felt well and complained of hunger; wound sound on 16th day, except where drainage tubes removed; general condition excellent.
ter din orning;	Free gas a pus, on opening abdomen; appendix congested and removed; no attempt to locate perforation; thoroug irrigation and drainage.	R	Second attack of typhoid; diagnosis confirmed by Widal reaction; first attack 10 yrs. before. Fever ran typical severe course; several hemorrhages; ulceration of appendix.
	Pus found in peritoneal cavity.	D	Death during 3rd day after diagnosis of perforation.
	Median in sion; pus and gas escaped; perforation closed with silk sutures; flushing with sterile warm water; ss drainage tube inserted, operation lasted 17 minutes.	D	Died on 3rd day after operation; necropsy showed general peritonitis, many ulcers; sutures holding well, no other perforation.
	Incision right iliac region, escape of gas, pus, and fecal matter; intestines distended, covered with lymph, colate color, thorough irrigation with warm salt solution, perforation sutured.	D	Entered hospital in extremis. Death before recovery from anesthetic. Widal reaction; numerous ulcers, some nearly ready to perforate
	Right late 1½ in. incision; escape of colorless sero-purulent fluid, intestines congested and distended; perforation closed with two rows mattress sutures; wiping with gauze and irrigation with salt solution; no drainag operation lasted about 1 hour. Second operation for intestinal obstruction on 22d day.	R	Condition excellent after operation, stitch abscess; fecal fistula which closed spontaneously. At second operation fecal fistula reopened, but after a week interrupted convalescence and perfect recovery.
	Incision o r appendix; appendix entirely normal; fecal matter exuding from ulcer had produced intense general eritonitis, closed perforation with deep sutures and 2d row Lembert sutures; cleansed with hydrog dioxid and normal salt solution; 3 gauze drains.	D	Rallied and lived 3 days; necropsy showed suture successful and numerous healed typhoid ulcers.
.....	Closure o erforation and drainage.	D	
	Incision o r cecum; abscess in right inguinal region; foul, fecal smelling fluid in abdominal cavity; adheston) ween intestines; flushing with normal salt solution; gauze drainage; incision left open and packed.	D	Died in about an hour.
.....	.....	R	Gesselewitsch states that this case was reported to the Russian Medical Society.
	Incision i right iliac region; intestine injected, distended covered with lymph flakes; abdominal cavity full of s ro-purulent fluid; clotted blood and feces in pelvis; perforation closed with fine silk mattress sutures. thorough flushing with salt solution; drainage with glass tubes and gauze from pelvis, l. hypochondri subhepatic region; operation lasted 30 minutes.	D	Died from general peritonitis 48 hours later; no other perforations; ulcers and other lesions of enteric fever; perforation firmly closed.
.....	Lutz state in discussion reported in Proceedings of St. Louis Med. Soc. that he had operated 3 times for perforation occurring during typhoid fever.	R R D	2 recoveries; 1 death.
	Abdomen pened below the umbilicus; escape of yellowish fluid containing fibrinous flocculi; loops of small in stine much congested; about 30 c. c. of ileum thinned by ulceration was resected and joined by end to s anastomosis; thorough cleansing of abdominal cavity and irrigation; gauze drainage from the pelvis, l bar fossa and site of operation, operation lasted 50 minutes.	D	Patient rested quietly during night after operation; but died the middle of next day.
	Incision l linea alba below umbilicus, escape of pus on opening peritoneum; intestines glued together by fibrinou exudate, perforation sutured with catgut Lembert sutures, peritoneal cavity wiped with gauze sponges ushed with saline solution, drained with glass tubes, pelvis drained with gauze; operation lasted hour.	D	Partial recovery under hypodermoclysis and stimulating enemata; fecal vomiting recurred, death 16 hours after operation.
y existed	Operation consisted in opening large abscess containing feces, pus and gas; exudate limited by plastic peritoni s.	R	Patient recovered with fecal fistula.
	Median in sion; perforation found within 2 minutes and closed with fine silk Czerny-Lembert sutures; some thr required to wash out abdomen, which was full of liquid feces, by large quantities of salt solution.	D	Death about 14 hours after operation.
	Median in soon below umbilicus; escape of turbid fluid containing lymph flakes, intense peritonitis; perforation found and closed with three Halsted sutures; flushing with hot sterile salt solution, gauze drainage.	D	Survived 8 days, during which time violent vomiting and diarrhea.
	Right latera incision; feces escaping from perforation, which was closed by 2 rows of sutures; irrigation with normal salt solution; drainage with gauze and glass tube; operation lasted 50 minutes.	D	Condition excellent until about 40 hours after operation, then sudden collapse, cyanosis, high pulse; death 8 hrs. later. Necropsy showed mild peritonitis; but nothing to account for sudden death.
	Incision halfway between umbilicus and right ant. sup. spine, well walled off cavity size of fist filled with pus opened, condition critical and impossible to search for perforation; drainage.	D	Death in 10 hours.
.....	On opening abdomen, peritonitis with effusion found; fecal matter in abdominal cavity; perforated part of intestine resected.	D	
	Four cm. of intestine at seat of perforation resected; abdominal wall not sutured until 8 days after operation; until then wound packed with sterile gauze.	R	Complete recovery.

Incision in linea alba; peritoneum slightly inflamed but no free gas, feces or fluid found at time of operation. A careful search revealed no evidence of perforation and abdomen closed.	D	Death 15 hours after operation. Necropsy: perforation in a coil of intestine in the pelvis; numerous adhesions limiting peritonitis chiefly to right side of pelvis.
Incision in linea alba; large amount of fecal matter in pelvis; one large perforation sutured; a second perforation a loop of bowel adherent to pelvis could not be closed because bound down by firm adhesions.	D	Death 4 hours after operation. Necropsy: General peritonitis; gas and feces in pelvis; numerous large sloughing ulcers in small intestine, extending upward 4 feet from cecum; appendix uninvolved; 1 ulcer at hepatic flexure; sutures firm.
Incision through right rectus; turbid serum in pelvis, no fecal matter; 2 or 3 places near perforation seemed about to perforate, adjacent intestinal coils covered with fibrin; perforation closed by double row Lembert sutures, transverse to long axis of bowel, serum wiped out with gauze sponges; 2 wicks of gauze to seat of suture.	D	Patient made good recovery from operation; some vomiting for two days after operation; on 3d day pulse became weak and rapid; temperature rose; fecal vomiting and death. Necropsy showed intestinal obstruction due to solid feces at site of suture; no peritonitis (probably) have recovered except for obstruction.
religious Incision through right rectus muscle; turbid fluid in pelvis and lower abdomen; perforated area excised and closed with Lembert sutures; another ulcer 4 inches from cecum about to perforate and a few sutures inserted, pelvis wiped; flushing with hydrogen dioxid and normal saline solution; gauze wicks to line suture; operation lasted 45 minutes	D	After operation condition poor: infusion normal saline solution; strychnia, etc., repeated twice in 12 hours; condition became worse, and death the next day. Necropsy showed general peritoneal cavity apparently normal, some injection in pelvis.
Median incision; excision of edges of ulcer; suture of intestinal wound; peritonitis apparently limited to right side of abdomen; collapse prevented as thorough irrigation and cleansing as was desired; drainage to seat of sutures	D	Death 4 days later from general progressive peritonitis.
On opening abdomen general adhesions found in region of ileum and right groin; perforation trimmed and sutured; irrigation drainage with glass tube.	R	For 2 days after operation temperature high, pulse rapid and feeble.
Median incision; escape of turbid serum on opening peritoneum; intestines distended, ecchymosed, patches of lymph adherent; perforation closed by interrupted continuous suture; irrigation with warm water; drainage; operation lasted 1 hour.	D	Patient lived nearly 4 days. Necropsy showed general peritonitis and a second perforation caused by suture passing through adjoining ulcer.
On opening abdominal cavity escape of gas; small intestine distended and congested; covered with flakes of adherent lymph; offensive, turbid fluid with fecal odor in pelvis; ulcer closed by double row Lembert sutures; intestines washed and abdominal cavity and pelvis flushed with hot sterile water; abdomen closed without drainage.	D	During anesthesia vomited matter entered the air passages; death resulted from broncho-pneumonia 36 hours after operation. Necropsy showed extensive areas of collapse in lungs; perforation firmly closed; no peritonitis.
Incision in the right flank; on opening abdomen purulent, odorless fluid escaped; perforation readily found and sutured; irrigation with boiled water.	D	Death a few minutes after operation; necropsy confirmed diagnosis of typhoid; intestine deeply ulcerated but no other perforations.
Cellotomy; perforation and large intraperitoneal abscess found; perforation sutured.	D	Recovered from operation and did well fifth day; hemorrhage from another ulcer caused death.
Operation for typhoid perforation in two cases.	R	One recovery and one death.
	D	
Incision over cecal region; sero-purulent fluid escaped on opening peritoneum; perforation readily found and sewed with deep mattress and Lembert sutures; intestines wiped and thorough irrigation with hot saline solution; multiple gauze drainage; operation lasted 37 minutes.	R	Convalescence uneventful.
	D	Lived but a few hours after operation.
Median incision; escape of bile-colored serum on opening peritoneum; perforation closed by deep and superficial sutures; wiping and prolonged irrigation of intestines; gauze drainage; operation lasted about 40 minutes.	D	Death about 9 hours after operation; thought to be due to acute suppression of urine. Patient had specific urethritis when taken with fever.
Cellotomy; ulcer invaginated and 2 rows fine silk sutures inserted; abdominal cavity washed with sterile salt solution; operation lasted 20 minutes	D	Death before abdominal wall was sutured. Patient was in very low condition at time of operation.
Cellotomy; on opening peritoneal cavity gas and serous fluid escaped; marked general peritonitis; ulcer invaginated and 2 rows silk sutures inserted, abdomen flushed with normal salt solution; drainage introduced and wound closed.	D	Death in 24 hours from septic peritonitis.
Abdominal contained fluid but no feces seen; general peritonitis; perforation sutured; intestines and abdomen heavily wiped, abdominal wound left open, packed with gauze.	D	Condition very bad after operation; rallied somewhat, but died 12 hours later.
Median incision below umbilicus; on opening peritoneum escape of large amount of sero-purulent fluid with faint fecal odor, margin of perforation excised; closed by Lembert sutures; thorough irrigation of abdominal cavity with sterilized water, mopping with marine sponges especially pelvis and lumbar regions; drainage tubes from pelvis and right loin; gauze drain passed upward; operation lasted 25 minutes.	R	Day after operation condition good; escape of considerable purulent fluid for several days. On fifth day after operation, right parotid bubo developed and abscess of buttock at site of injection of saline solution; 21st day, double otitis media; 24th day, effusion into left knee; 60th day relapse lasting 14 days; Widal test positive; spleen enlarged. A year after illness patient fat and well.
Median incision; on opening peritoneum escape of gas and thin yellow feces; lymph on intestines and mesentery in vicinity of perforation; closure of perforation with 2 rows of sutures; abdomen cleansed and closed without drainage.	D	Death 55 hours after operation from peritonitis.
Median incision from umbilicus to symphysis, escape of sero-purulent fluid on opening abdomen; peritoneum injected; fibrinous deposits on intestine; perforations closed with Czerny-Lembert suture; numerous antiseptic tampons inserted in all directions; wound left open.	D	Patient in very low condition after operation; stimulants and infusion of salt solution unavailing. Death 14 hours after operation; disease of very severe type; at necropsy very numerous intestinal ulcers, abscesses of spleen and mesenteric glands, ulcer of larynx, etc., were found.
Incision in right semilunar line; escape of ill-smelling, greenish-yellow serum and feces; ileum greatly congested, several thin ulcerated areas; perforation closed by interrupted Lembert and second continuous sutures; irrigation with hot sterile water; large glass drainage tube inserted.	D	Death almost immediately after operation.
Median incision; escape of sero-purulent fluid with feces; lymph flakes adherent and appearance of septic peritonitis; perforations sutured; operation hastily completed by tamponing abdominal cavity because of patient's bad condition.	D	Death 18 hours after operation; necropsy confirmed diagnosis of typhoid fever.
Perforation not found at operation, but fecal fistula developed a few days later.	R	Recovery.
Median incision; 6 inches of intestine thickened, red, coated with lymph; whitish fluid and feces in abdominal cavity; edges of perforation excised and closed with double row Lembert sutures; flushing with normal salt solution; suture without drainage.	D	Patient nearly moribund at operation; free stimulation, oxygen inhalation, elevated foot of bed, etc.; lived 9 days in typhoid state; no symptoms of peritonitis; wound gangrenous at time of death; abdominal cavity uninflamed except slightly in region of sutures
Incision over prominent tumefaction; escape of turbid fecal fluid; cavity entered formed by firm peritoneal adhesions, located mainly left of median line and below McBurney's point; drainage with tube and gauze.	R	Recovery; bacteriologic examination showed typhoid bacilli, colon bacilli and various monococci. Widal reaction positive.
Median incision; fecal fluid in abdominal cavity; intestines and omentum much inflamed; perforation closed by transverse continuous suture and omental graft stitched over; toilet of the peritoneum and drainage.	D	Reacted well, but was taken with vomiting and persistent cough and died 3 d. after operation. Necropsy showed suture unchanged; peritonitis limited to pelvis about perforation; hypostatic congestion of lungs; purulent infiltration right side of chest and abdomen; Fyer's patches all thickened; Widal reaction positive. Bacteriologic examination showed muscles infiltrated with streptococci.
Operative treatment as in preceding case.	D	In spite of free stimulation patient did not react and died 10 hrs. after operation.
Incision 3½ inches along outer border of rectus abdominis below umbilicus; escape of straw colored serous fluid; longitudinal infold of intestinal wall and continuous silk suture reinforced by continuous catgut suture; 2 other thinned areas sutured; intestines wiped; gauze drainage from both iliac fossæ and Douglas pouch; operation lasted 1 hour.	R	Slight nausea and vomiting during 1st day after operation, but no pain nor tenderness; nutrient enemata and free stimulation; recovery from operation uneventful. Fever lasted 25 days and relapse 16 days, but eventually perfect recovery.

One additional table may be proper: No. 95 is marked as a recovery as he recovered from the operation and died on the thirty-fourth day from the fever. Nos. 111, 113, 114, 115, 140, 141 and 143 are only of value

123	Neschaleff and Troianoff. Ietropice rousskoi Kirourgie, 1897, ii, 406, in Presse Medicale, 1898, May 18, 251.	M. 39	Ileum.	Had been in hospital 10 days.		On opening abdomen, of intestine resected.
124	Neschaleff and Troianoff. Ietropice rousskoi Kirourgie, 1897, ii, 406, in Presse Medicale, 1898, May 18, 251.	M. 28	About 21 cm. above the ileo-cecal valve.		About 17 hours.	Four cm. of intestine a tion; until then wo
125	Nicholson, A. E. Brit. M. J., 1899, i, 1097. Proc. Leeds & W. Riding Med. Chir.	M. 14		16th day of disease.	9 days.	Abdomen opened in inserted.
126	Nicoll, F. P. Report by Rolleston, Brit. M. J., No. 1, 1898.	M. 21	Perforation of appendix near cecum.			Appendix resected, ste
127	Nixon, J. E. Lancet, 1899, i, 505, and Brit. Med Jour., 1899, i, 345.	M. 37	In a loop of ileum near pelvic brim; opposite mesenteric attachment; 1½ inches in length.	About 11th day.	About 22 hours.	Incision 4 inches long opening, inverted an tension, irrigation w
128	Nixon, J. E. Lancet, 1899, i, 505, and Brit. Med. Jour., 1899, i, 345.	M. 17	Perforation of the ileum 9 in. from cecum.	About 25th day.	18 hours.	Incision as in preceding with difficulty with of pelvis; operation
129	Nixon, J. E. Lancet, 1899, i, 505, and Brit. Med. Jour., 1899, i, 345.	M. 22	About 9 inches from ileo-cecal valve.	About 18th day.	19 hours.	Incision as above; gau serted; flushing wit
130	Nixon, J. E. Personal.	M. 26	3½ inches from the ileo-cecal valve.		About 36 hours.	Incision in linea alba tion 1 short sear
131	Nixon, J. E. Personal.	M. 25	Perforation oval in shape, the long diameter being in the transverse direction of the gut.		About 96 hours.	Incision in linea alba; foration in loop of il
132	Noble, C. B. Personal letter.	M. 19	Six inches (15.2 cm.) from cecum.	14 days after first malaise.	11 hours.	Incision through right seemed about to per row Lembert sutures; gauze drainage of sutu
133	Nolan, C. A. Personal letter.	F. 35	Perforation with ragged edges ¾ inch, 7 inches (17.8 cm.) from cecum.	About the 13th day.	5 hours (delayed by religious rites).	Incision through right and closed with Le sutures inserted; pu to lift of suture; o
134	Norris, Chas. A. Personal letter.	M. 35	About 15 inches (38.1 cm. from cecum.		18 hours.	Median incision; exc to right side of abdo ago, to seat of sutures
135	Nott, Canada Lancet, 1897, xxx, 385.	F. 26	Large ragged perforation in ileum.	1112 wks. before admission to hos.		On opening abdomen p sumed, irrigation
136	Nowland and Goodall. Med. supplement to Practical Com., Metropolitan Asylums Board, 1898.	F. 8	Perforation ¼ inch (6 mm.) in diameter, 30 inches (75 cm.) from ileo-cecal valve.	End of 4th week.	12 hours.	Median incision; excis of lymph adherent; drainage operation
137	Nunn, Australasian Med. Gaz. 1899, xviii.	M. 38	18 inches from cecum; about size of a pea; on free surface of bowel.	During 3rd week.	6 hours.	On opening abdominal of adherent lymph; sutures, intestines closed w. gauze drain
138	Nyssens, M. E. Bull. et mem. de la Soc. Anat. Paris, 1899, lxxiv, 443.	M. 23	In ileum 74 cm. above ileo-cecal valve; 3 mm. in diameter.	About the 8th day.	About 14 hours.	Incision in the right fla and sutured; irrigat
139	Nyssens, N. Personal letter.	M. 50		During 3rd week.	4 days.	Colotomy; perforatio
140	Nunn, N. Personal letter.	.....	.....	.....	.....	Operated for typhoid p
141	Taylor, H. M. Va. Med. Semi-Monthly, III, 1898-99, 719.	M.	About 12 inches above cecum, circular, punched-out opening.	3 days after fever from relapse of 10 days after fever of 6 weeks.	15 hours.	Incision over cecal reg and closed with deep saline solution; mul
142	Taylor, H. M. Va. Med. Semi-Monthly, III, 1898-99, 719.	M.	.....	.....	Several days.	.....
143	Taylor, H. M. Maryland Med. Jour., 1899, xlii, 101.	M. Young adult.	Lower part of ileum, about 12 in. (30.5 cm.) from ileo-cecal valve; 2 perforations on free margin of bowel about 4 in. (10.2 cm.) apart.	Had been sick 6 wks.	About 4 hours.	Median incision; exca sapered sutures; about 25 minutes.
144	Taylor, W. J. Therapeutic Gaz., June 15, 1899.	M. 34	About 10 in. from ileo-cecal valve. Size lead pencil.	About 18th day.	About 4 hours.	Celiotomy, ulcer inva salt solution; opera
145	Taylor, W. J. Therapeutic Gaz., June 15, 1899.	M. 47	About 8 inches from cecum; pin-head opening.	24th day.	1½ hours.	Celiotomy, on opening invaginated and 2 re duced; ad wound cl
146	Tiffany and Gamble. Personal to Prof. J. M. Flinney.	M. 26	Perforation 5 mm. in diameter, edges sharply marked; 8 in. (20.4 cm.) above ileo-cecal valve.	In 3d week.	36 hours.	Abdomen mantled and domina cavity wiped
147	Thurston, E. O. Hawkins and Thurston, Lancet, 1899, ii, 1004.	F. 11	Perforation in anterior cecal wall; ⅛ inch in diameter, surrounded by indurated tissue.	41st day.	About 15 hours.	Median, 4 inch incision fluid was faint fecal tion of abdominal ca bar regions; drainage 25 minutes.
148	Van Duyn, J. Personal.	M. 43	8 inches from cecum; size and outline of a small bean.	19 days after confined to bed; ill several days before.	9 hours.	Median incision; on o mesentery in vicinity and closed without d
149	Wanach, R. Rep. by Gesselewitsch M. St. Petersburger Med. Woch., 1898, xxiii, n. f. 15, 21.	M. 24	Two perforations, 21.6 cm. and 41.6 cm. from cecum.	About end of 2d week.	18 hours.	Median incision from t toneum injected; fi numerous antiseptic
150	Willard, De Forest. Annals of Surg., 1899, xxix, 503.	M.	4 in. (10.2 cm.) above ileo-cecal valve; just large enough to admit grooved director.	15th day.	Between 5 and 6 hours.	Incision in right semil congested, several th sutures, irrigation w
151	v. Winiwarter. Rep. A. Polls. Ann. Soc. Méd. Chir. de Liége, 1897, xxxvi, 266.	M. 18	3 perforations found in small intestine near cecum.	.....	About 2 days.	Median incision; cecum peritonæum; perforat of patient's bad condi
152	Wladislaw, C. W. Rep. by Gesselewitsch, St. Petersb. Med. Woch., 1898, xxiii, n. f. 15, 21.	.....	.....	.....	.....	Perforation not found
153	Woodward, S. B. Boston Med. and Surg. Jour., 1898, cxxxix, 544.	M. 18	Small intestine; opposite mesentery; size of a pea.	About the end of 2d week.	About 9½ hours.	Median 3 inch incision abdominal cavity; ec with normal salt solu
154	Champlin, S. H. Personal communication and "The Plexus," Chicago, 1899, v, No. 5, 164.	M. 10	Perforation not found.	During 6th week.	3 days.	Incision over prominet toneal adhesions, loc and gauze.
155	Champlin, S. H. Personal communication and "The Plexus," Chicago, 1899, v, No. 5, 164.	M. 22	Perforation of ileum about 30 cm. from ileo-cecal valve.	14th day.	.....	Median incision; fecal closed by transverse drainage.
156	Champlin, S. H. Personal communication and "The Plexus," Chicago, 1899, v, No. 5, 164.	M.	Perforation 20 cm. from ileo-cecal valve.	At the end of 1 mo.	.....	Operative treatment as
157	Saleeby, N. M. Phila. Med. Jour., 1899, iv, 270.	M.	Pinhole perforation in thickened and inflamed Peyer's patch, 18 in. from ileo-cecal valve.	13th day.	About 24 hours.	Incision 4 inches alon fluid; longitudinal in suture 2 other thing Douglas pouch; opera

* Cases 1 to 97 will be found in my book on "The Surgical Complications and Sequels of Typhoid Fever," Philadelphia, 1898. The following remarks as to cases in the additional table may be proper as determining the recovery rate. Nos. 118, 153 and 155, though somewhat doubtful, are reasonably certain to have been cases of typhoid perforation.

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EYE-COMPLICATIONS IN TYPHOID FEVER.

By Alvin A. Hubbell, M. D., Erie County.

Eye-diseases complicating typhoid fever are of rare occurrence. Often practitioners of very large experience never meet them. Partly because of their infrequency, but more particularly because of the similarity of their symptoms, diagnosis, cause and treatment to those of the same diseases arising under other circumstances, a lengthy consideration of them is unnecessary on this occasion. I shall, therefore, discuss them very briefly and quite summarily.

The infrequency of eye-diseases in typhoid fever is, perhaps, quite out of proportion to that of other complications. It is probable that some of those involving the interior of the eye are overlooked through neglect to use the ophthalmoscope; but even in that case, their frequency is not as great as would be expected, if we take into consideration the undoubted quantity of toxines generated and carried into the circulation during the typhoid fever process, the omnipresence in the body of the typhoid-fever germs and their occasional pyogenic character, as set forth in that classic on the "*Surgical Complications and Sequels of Typhoid Fever*," by our distinguished guest and learned colleague, Professor Keen.

Conjunctivitis, both catarrhal and herpetic, and inflammations and ulcerations of the cornea are seen more frequently than other eye-complications, unless, perhaps, we except those more strictly functional troubles manifested by dilatation of the pupils and weakness of accommodation. Retinal hemorrhages seem to be next in frequency, according to published reports. Other diseases which have been ob-

served are hypopyon, suppurations of the deeper structures of the eye and panophthalmitis, iritis, cyclitis, choroiditis, opacities of the vitreous humor, opacity of the crystalline lens, optic neuritis, both retro-bulbar and intra-ocular, with subsequent partial or complete optic-nerve atrophy, neuro-retinitis, embolism of the central retinal artery, orbital cellulitis, thrombosis of the orbital blood vessels, orbital hemorrhage, paralysis of the extra and intra-ocular muscles, together with scotomata and general impairment of vision which are but secondary to the inflammations, atrophies, or hemorrhages present, or perhaps to an over-powering toxemia which but temporarily disturbs vision and muscular action. Hemianopsia has been recorded, but can only be due to some lesion posterior to the optic commissure and not to any disease of the eye itself. These complications seldom develop during the early stages of typhoid fever, but for the most part, late in the disease. Some of them are post-febrile in their manifestations, particularly the ocular palsies and optic nerve atrophy.

As early as 1817, even before typhoid fever was recognized by the profession at large as a distinctive disease, Carron du Villards, in an epidemic, undoubtedly of this disease, observed a series of cases of persistent amaurosis. Numerous cases of the various complications above mentioned have since been recorded from time to time. I shall not, however, undertake to review them here. I will refer those who are interested in their historical details and bibliography to the exhaustive works of Foerster (Vol. XII of the first edition of Graefe and Saemisch's "Handbuch"), Max Kneis (Relations of Diseases of the Eye to General Diseases, American edition by Noyes, New York, 1895), and Émile Berger (Les Maladies des Yeux dans leurs Rapports avec la Pathologie Générale, Paris, 1897), and the excellent chapter by Geo. E. de Scheveinitz, in the monograph of Professor Keen already mentioned. Charles Stedman Bull has also given a

brief résumé of the subject in a paper published in the New York Medical Record April 24, 1897.

Most of the eye-complications in typhoid fever may, I think, be regarded as due, directly or indirectly, to the action of the typhoid fever germs themselves or of the toxines which they generate. In some cases they may be caused by the germs or toxines of other complicating diseases. While typhoid fever germs may, at times, be the active agents in the production of eye diseases, it is probable that their toxines play the most important rôle. This cannot, with our present knowledge, be demonstrated, but the history of the action of toxines in diphtheria and other infectious diseases makes such probability the more likely. But whether the active principle in these diseases be germs or toxines, they are potent in proportion to their virulency, their detention by an enfeebled circulation, and the diminution of tissue-resistance. In many cases, their action may fall short of producing inflammation, amounting only to functional disturbance of vision and ocular motility, as shown by temporary impairment of vision, vascular congestion, diminished winking-reflex, weakened accommodation, and dilated pupils. Such cases, as might be expected, are by far the most frequent. In other cases, a superabundance of germs or an unusual virulence of the toxines induces in the eye-tissues at a low ebb of vitality the most active inflammations, such as I have detailed, sometimes terminating in destructive suppuration and ulceration. The uveal tract, by its great vascularity, and the cornea by its exposures, are peculiarly open to such attacks, and hence the iritis, choroiditis and keratitis. The delicate nerve-elements of the eye are also susceptible to such invasions, and hence the neuritis and retinitis.

Beside those conditions which are so evidently due to local germ-action or intoxication, there are some affections which are transmitted by contiguity from pre-existing, com-

plicating diseases of the adjoining sinuses. This undoubtedly accounts for certain cases of conjunctivitis and orbital cellulitis. Embolism of the central retinal artery, with the immediate blindness which takes place in the eye whose retina is thus deprived of its blood-supply, thrombosis of the orbital veins, hemorrhages into the orbit, or intra-ocular hemorrhages, are all secondary to preceding, complicating affections of the endocardium, blood-mass, or blood-vessel walls.

In very low states of typhoid fever with such profound toxemia as to abolish those muscular contractions by which the eyes are kept closed during sleep or the winking-reflex is maintained while awake, and to paralyze the secretory function of the glands which moisten the eye, the conjunctiva and cornea become desiccated, their delicate epithelium breaks down and microbic invasion takes place with all the attendant evils of xerosis, ulceration, abscess, and oftentimes total destruction of the eye. I need not dwell on the symptoms of these complications, for they are the same here as when these diseases occur from other causes. Fewer cases, however, of intra-ocular complications will pass undiagnosed, if practitioners will examine the eyes of typhoid fever patients or cause them to be examined with the ophthalmoscope.

The prognosis of these complicating diseases is made more unfavorable in typhoid fever than when they are found in persons of otherwise good or fairly good health, and the results are bad, especially in the ulcerative and suppurative affections, in proportion to the gravity of the primary disease. The treatment may also be dismissed with a very brief reference. The same measures should be adopted that would under other circumstances suggest themselves. Corneal and conjunctival affections may often be prevented by attending to the closure of the eyelids, if they are inclined to remain open, and to keeping the parts moist by occa-

sionally instilling into the conjuctival sac a drop or two of a normal saline solution of a very mild antiseptic solution.

Fortunately, eye-complications are comparatively rare in typhoid fever; fortunately when they do occur, they are readily diagnosed, if the proper care is exercised and instruments used; fortunately, again, their treatment is guided by the same principles that prevail elsewhere in the same diseases, and very little uncertainty need be felt as to what to do.

SOME PECULIAR ASPECTS OF TYPHOID FEVER.

By E. G. Janeway, M. D., New York County.

The number of papers promised upon typhoid fever has led me to limit myself in time and subject. I have thought that a brief notice of some of the peculiar aspects in which the disease has at times been observed might be of interest. So far as I can learn, one of the effects upon the nervous system must be very uncommon in this country. It has been my good or bad fortune to meet three cases of tetany developed in the course of typhoid fever. Of the two former I made brief mention in the discussion of the paper upon tetany read by Dr. F. C. Griffiths, before the Association of Physicians, and published in the Transactions, volume nine. They related to one male patient seen at Bellevue Hospital, and a lady seen in consultation with Drs. Dennis and Garmany. In her case it formed a distressing and embarrassing complication, for the rigidity involved not only the extremities, but also the jaws. The feeding, in consequence, became a matter of considerable difficulty. She recovered after a protracted sickness. The third case I saw in the spring of this year in consultation with Dr. Manges, of this city. This patient was very ill and suffered with marked tympanites at the time of development of this complication. He died as a result of perforation of the bowels, his condition at the time forbidding recourse to a laparotomy.

It is possible that some have encountered cases of this nature, but have considered them as instances of marked muscular rigidity rather than of tetany. Dr. Manges has told me of his intention to publish this last case, and that in written communications with physicians of large experi-

ence in typhoid fever in this country, I am the only one who has happened to encounter it complicating typhoid. Should any desire a good account of tetany, I would refer them to the masterly article by Trousseau in his work on clinical medicine (though the therapeutics have changed since its publication), and to the additions in the works on nervous diseases published since that date. Trousseau, you will find, speaks of its occurrence rather after than during typhoid.

In some cases of typhoid fever, owing probably to individual idiosyncrasies, the mental state is rapidly altered, so that patients are supposed to suffer from mania or melancholia or possibly from puerperal insanity. I have seen patients in the early stage of typhoid fever where the question of the first mentioned condition was entertained instead of the disease which through its influence upon the system had initiated the phenomena. A careful study of the physical state of a patient on more than one occasion should prove to a careful observer such associations with perverted mentality as would prevent the diagnosis of insanity. Nevertheless I have in the past seen patients sent to the reception hospital for the insane who had fever. Such psychoses should be considered totally apart from the delirium proper of the disease, which occurs toward the late period of the illness, and in fact they need a different method of treatment.

Allied to this mental state is also the suicidal tendency which at times is developed in typhoid fever. Such complication may apparently come out of a clear sky, but it should be kept in mind as a possibility and guarded against if the least suspicion of its approach arises; for no more sad affliction can befall the friends of the patient. It would be a wise rule never to leave a delirious patient alone, never to have windows, more especially if on an upper story, so arranged that the patient can get out, and never to have pistols, razors, knives, etc., in such proximity to a feverish

delirious invalid, that he could readily use them should an insane impulse seize him. It is not enough to have an order given that the attendants shall not leave a patient under these circumstances, but to provide such accessory help that the rule shall be enforced.

I should like also to speak of two eruptions which have had considerable interest for me in typhoid fever. Herpes labialis is of such extreme infrequency in typhoid fever that its presence in a suspected case makes me to carefully revise the diagnosis. On not a few occasions when I have noted it in cases which I had been told were probably typhoid fever its presence caused me to give the case a more than ordinarily rigid examination. This has usually resulted in the discovery of a hidden pneumonia, cerebrospinal meningitis or malarial fever as cause instead of typhoid. Herpes is not impossible in typhoid but improbable. For a considerable period I had seen a number of cases of typhoid without encountering a petechial eruption as a complication and had felt inclined to say it did not occur. Later I was obliged to admit its occasional occurrence in the late stages of the disease. The following illustration will, perhaps, show the want of foresight in making a too dogmatic assertion. At a time when some typhus fever was prevailing in New York, I saw in consultation in the early period of his illness, a young man with a serious fever, as yet it was not possible to name it unless I had chosen the method of Chambers and dubbed it typh fever. I told the physician in attendance that taking all the conditions into account it would in all probability be typhoid, but that if a petechial rash should develop in a few days we would be obliged to consider it typhus fever. A little later I was asked to come again as a petechial rash had been observed. To my surprise, however, I found that a catarrhal jaundice was present as a complication, and with this he had developed an erythema, in the center of

the patches of which in not a few places were petechiae. There was not the characteristic rash of typhus. All the phenomena at that time, and the subsequent course sustained the diagnosis of typhoid fever. Again towards the end of typhoid fever hemorrhagic tendencies may develop and petechia occur. The strangest aspect I have seen produced is that which may develop under the coils of the cold water tubes if such are too continuously applied to the abdomen in these cases. Wherever the coils have lain a thickly set crop of petechiae may be present with intervening sound skin, producing an appearance of circular rows of blood extravasation. I might add that when these hemorrhagic tendencies occur I have found the tartrate of iron and potash of service.

The onset of typhoid fever in women during the puerperal period has been in my experience a source of serious anxiety to the physician until the proper diagnosis was established. In one case more especially all the circumstances seemed to point toward septic rather than typhoid fever. A woman was taken with fever within thirty-six hours after confinement. She had been delivered with instruments by a demonstrator of anatomy, before a class of students in a college ampitheatre. For some days the source of this fever was uncertain, though the complete absence of proof of inflammatory conditions in or about the uterus seemed to warrant the hope that the possibility of infection from the conditions named had unduly alarmed the physician. The patient became early violently delirious, developed diarrhoea and died of exhaustion. The autopsy showed death due to typhoid fever and entire absence of inflammatory conditions about the uterus or adnexa. The consideration of this diagnostic problem has been forced upon me six times. In one other the fever developed on the day of confinement, which occurred in the Emergency Hospital of this city.

Another problem that will at times be present is pain in the right iliac region. Pain and tenderness in this situation may be greater than usual, not alone at the outset of a typhoid fever, but also in the early period of a relapse. Thus with fever may occur a possibility of mistake between typhoid fever, and appendicitis. In fact I have met or had knowledge of seven cases in which either the appendix was removed, or a laparotomy performed and the appendix not removed because normal, or the operation proposed in typhoid fever at the early stage or in the commencement of a relapse. Moreover I have been consulted in one case to decide whether there was typhoid fever or appendicitis in a young lady of sixteen, because chill, fever, and pain and tenderness on the lower right side of abdomen which was dependent upon a sapraemia due to a retained menstrual flow. Whilst early operation is desirable in appropriate cases of appendix inflammation, it is certainly a great error of judgment to remove the appendix in the early period of typhoid fever because of diagnostic error, or haste to operate in uncertain cases. The study of the history of the case, an examination of the number of leucocytes, and a careful physical examination with reference to the size of the spleen, and the presence or absence of roseola, will in most cases help in establishing a correct diagnosis. The absence of leucocytosis would favor the diagnosis of typhoid, whilst a decided leucocytosis would be against typhoid fever, as the condition, or as the sole condition. Of course, I am aware that in rare instances the appendix may give rise to trouble in typhoid fever. The leucocyte count has helped me decidedly in two cases in this category. Though in one I was unable to see the patient until the second day, but had required a count of the white cells while waiting. The twenty-four hours delay was as helpful. There was no leucocytosis and the pain and tenderness had disappeared

from the right iliac fossa by the time of my visit. The patient went through a relapse of typhoid fever.

Two conclusions moreover have been forced upon me as the result of observing a large number of persons infected with fever in institutions. When the subjects are young and but a meagre history has been kept a simple observation of a considerable number may not enable the medical observer to decide positively whether he has to deal with typhus or typhoid fever, provided that from the knowledge that typhus fever exists in the vicinity he is aroused to suspect it. Again when typhoid fever breaks out in an institution, particularly amongst young people, a considerable proportion of those attacked will not develop the complete disease. Whilst perhaps the word abort may not be the most correct, it most fully expresses what I have observed in this regard at outbreaks in the Deaf and Dumb Asylum of this city, the Catholic Orphan Asylum, and in other institutions. Of a large number becoming sick with much the same symptoms in as considerable a number as one half the fever would subside within three to ten days. The observation of this occurrence on several occasions has forced me to believe that we have a typhoid febricula though we are only able to rightly recognize it when a number of others subject to identical conditions become ill in the same way, at the same time, but proceed to the full development of the malady. I have long desired to have such cases tested for Widal reaction, but no opportunity has been afforded. Such a conclusion shows how erroneous is the reasoning of those who at the beginning of a fever immediately dub it typhoid fever, and after medication of a special kind claim that the disease was aborted by the measures employed. In the cases of which I make mention Nature was the aborter, if I may so express myself.

This leads me to mention two conditions which are observed occasionally in the early period of typhoid fever. The

first consists in an attack of stomach and bowel trouble with fever, or of fever without these, which subsides in one to two or three days. This leads the physician to suppose the case merely of some intestinal intoxication, grippe, malaria, etc., but in a short period the patient passes into a regular typhoid fever. The observation of cases of this nature each year has led me to feel assured that directly or indirectly the typhoid organism has been responsible for such occurrence. Again at times without antipyretics, there will be a drop in temperature toward the close of the first week or in the early part of the second week lasting for a considerable part of a day. My attention was first drawn to this at a time when relapsing fever prevailed in New York city and I had hoped that a patient who seemed to have typhoid might instead have, owing to this, relapsing; but the fever was present the next day and continued as well defined typhoid, terminating fatally by intestinal hemorrhage at the close of the second week. Rarely since then I have met this same peculiarity. Observations of this nature demonstrate the need of continuing care where any suspicion exists of the development of typhoid fever.

Whilst a number of other conditions suggest themselves as of interest I will merely burden you with one of considerable importance. I advise that in office practice rectal temperatures should be more frequently used, not only in the first stage of typhoid, but also in other febrile conditions. The mouth temperature may be normal while the rectal shows the true condition of affairs. Not a few patients, who come to a physician's office with headache and malaise would be sent home instead of receiving a prescription to relieve an engorged liver, or remove a rheumatic or gouty condition, etc., were rectal temperatures more frequently taken in office practice.

THE SPHERE OF DRAINAGE IN SURGERY OF THE APPENDIX.

By William Stevenson MacLaren, M. D., of Litchfield, Conn.

The sphere of drainage in the surgery of the appendix may, I believe, be well defined, and is, I also believe, very limited.

For convenience in discussion cases of suppuration about the appendix may be divided into two classes. The first class comprises those cases in which the abscess is localized, being shut off from the general cavity by adhesions; the second includes all those more serious cases in which the pus has entered the general abdominal cavity and caused greater or less inflammation.

Cases of the first class are simple abscesses, and should be treated like abscesses of any other region. In these cases, drainage is a perfectly proper, though sometimes unnecessary, procedure. The second class, however, are totally different in all their conditions, and there is no more propriety in treating them like abscesses than there would be in giving ulcer of the stomach treatment that would be proper for ulcer of the leg. My reasons for feeling so strongly opposed to drainage in these cases are two. In the first place, drainage, properly speaking, in them is an impossibility; in the second place, I am opposed to it because there is another procedure which is feasible, more rational and which must give better results.

Attempts at drainage usually take one of two forms, viz.: The glass tube or gauze strips. We all know how quickly a foreign body in the abdomen becomes shut in by adhesions. During my service as interne at Bellevue Hospital, some years ago, when drainage was more fashionable than

it is at present, I watched this phase of the question very closely, and I have seen the isolation complete at the end of twelve hours. If this occurs in those cases where we are able to perform an autopsy, how much more certain to occur, it must be, in the body of a person having sufficient vitality to recover. Not only does the drain accomplish no good purpose, but it is in itself a factor on the wrong side. It cannot help recovery, but directly militates against it, for, it irritates a surface already inflamed.

That this irritation is a fact is proven by comparing the dead-house findings in undrained abdominal sections with the histories of those cases that recover in spite of the drainage tube. Where section has been performed for simple ovariotomy and death ensues from causes other than inflammation of the peritoneum, we do not expect to find serum in the pelvic cavity. If, however, a glass tube is used, the house surgeon, with his little syringe, is able to draw from the small pocket thus formed, from two drachms to half an ounce of bloody serum every two hours, for two or three days, if the visiting surgeon deems it wise to keep the seton in place for so long a time. If gauze strips are used the irritation caused increases directly in proportion to the number of strips employed. Why should a man who, in operating for a wound of a viscus where infection is feared, introduces strips of gauze to encourage the formation of adhesions, shutting off this region from the general cavity, except that gauze introduced for purposes of drainage will not become isolated with equal promptness? The only good which may be rationally hoped for from drains used in this way is that among the many lines of irritation there may be one which passes close to a pocket in which pus is forming, and that this pus may break through into the line of the drain. This is a possibility. If, however, no drains had been employed, and such a pocket had formed, it would be equally possible for the pus to find its way into

a hollow viscus, and the certainty of drainage irritation would be obviated.

The procedure which I would urge as a substitute for drainage is the same that has been recommended by Wiggin for a variety of other purposes, and is its exact opposite. I refer to leaving the abdomen filled with saline solution. We all, I believe, admit that the peritoneum has to a certain degree the ability to resist infection. I believe this resisting power is enormously increased by the presence of the fluid. The reasoning which brings me to such a belief is this: In the first place, let us suppose that, in a given case, after the peritoneum has been cleansed as thoroughly as possible there is a small corner, an inch square, which is still infected. Let us call the amount of this particular variety of infection, which a square inch of peritoneum can destroy, *one*. Let us further suppose that the actual amount of infection on the square inch in this case is equal to *three*. It is evident that if two-thirds of the total amount of infecting material could be removed from the surface, and prevented from multiplying, while the one-third was being destroyed, and then, a little at a time, brought again in contact with it, the entire amount of that infecting material could be destroyed by the one inch of peritoneum. This is one thing which the saline solution accomplishes.

If we place in the peritoneal cavity an amount of fluid which will require four or five days for its absorption, you can readily see that the infecting material which, instead of lying in contact with the peritoneum, is diffused throughout the mass of the fluid, will be returned, little by little, to the surface during the absorption of that fluid, and the original amount of infecting material will not be markedly increased, as saline solution is not a culture medium.

In the second place, taking the same suppositious case, in which the amount of infecting material that may be destroyed by an inch of peritoneum is one, but the amount

present is three, if we could take that infecting material and, instead of leaving it in contact with one inch of peritoneum, could spread it over three inches or more, we would, by this means, again render possible the destruction of all the infecting material. This is another thing which the saline solution definitely accomplishes. The infecting material, instead of being left in contact with a small area of peritoneum, is diluted and brought in contact with the entire lining of the peritoneal cavity.

To demonstrate that this procedure, which seems to me so sound in theory, may also lay some claim to soundness in practice, I would briefly mention two cases. The first of these came under my own observation; for the notes regarding the second I am indebted to Dr. W. L. Platt, of Torrington, Connecticut.

On March 29, 1898, Dr. Elias Pratt, of Torrington, was called to see William W———, sixteen years of age, who gave the following history: There had been several attacks of pain in the right iliac region. The last of these occurred in July, 1897, at which time he was ill for three days, no physician being called. Since this time there had been occasional ill-defined colicky pains. The present illness began during the night just passed. The patient had been kept awake by colicky pains referred to the right iliac region. There was some vomiting. Examination disclosed slight tenderness at "McBurney's point." The pulse was 65 and the temperature 99° F. On March 30 his pulse was 70 and temperature 99.5°. There was slight pain, and the tenderness had increased. The bowels had moved during the preceding night. At 11 a. m. there was a chill, accompanied by vomiting, a pulse of 85 and a temperature of 101.5°. At 4 p. m. the pulse was 100 and the temperature 102°. There had been no further vomiting. The pain was not marked, but the tenderness was increasing. At 9 p. m. the pulse was 90 and the temperature 101.5°. There was perceptible

resistance on palpation, and the percussion note was dull. At 6 a. m. on March 31st, the pulse was 95 and the temperature 100.5°. His condition was much the same as on the previous night, except that the resistance was increased. At about 11 a. m. of this day I saw the case with Dr. Pratt and, on his agreeing with me as to the need of immediate surgical interference, decided to operate as soon as preparations could be made. By 2 p. m. the pulse had reached 110 and the temperature was 102°. The operation was performed, with Dr. Pratt's assistance, at 4 p. m. Under ether anaesthesia the abdomen was opened by a three-inch incision parallel with Poupart's ligament. On opening the peritoneum there was an immediate escape of extremely foul smelling pus, and a small quantity of gas. The appendix was readily found in a pocket opening freely into the general abdominal cavity. It was about two and a half inches in length and gangrenous at its extremity. Some difficulty attended the removal, owing to lack of assistants, extreme rigidity of the abdominal muscles and a broad, short mesocolon. The appendix was partially surrounded by a fold of omentum which, as it was in a sloughing condition, was removed. The remaining adhesions were broken up, and the peritoneal cavity washed out thoroughly with normal salt solution by means of a long glass tube, used as an irrigation nozzle, and introduced into the lower part of the abdomen and pelvis. Owing to the rigidity of the muscles I feared that the washing through the original incision could not be thorough, and for this reason made a second opening parallel with, and to the left of, the median line. Through this second opening I was able to remove about an ounce of pus, which would otherwise have remained between the bladder and rectum. Eight ounces of the peroxide of hydrogen, full strength, were poured into the abdomen and allowed to remain for several minutes. The washing was then repeated. The first incision was

next closed, the abdomen was filled with saline solution and the second incision was closed, leaving no opening for drainage. The coils of intestine in the upper part of the abdomen had appeared normal; those in the lower part were congested and dotted with a few fine flakes of fibrin. At 9 p. m. on this day the pulse was 130 and the temperature 102°. At 7 a. m., on April 1st, the pulse was 124 and the temperature 101.2°, and at 7 p. m. they were 114 and 101.8° respectively. At 9 a. m., on April 2d, the pulse was 74 and the temperature 99.2°, and at 10 p. m. the pulse was 78 and the temperature 99.8°. After this the pulse remained normal and the temperature never reached 100°. The bowels were moved with seidlitz powder on the fourth day.

The second case occurred in the practice of Dr. W. L. Platt, of Torrington. In February, 1899, he was called to see Daniel C———, who presented signs of appendicitis. These signs became steadily more marked, and three days later Dr. Platt decided to operate. When the abdomen was opened the appendix was found to be perforated, and was removed. The adhesions were few. There was an abundance of pus in the general cavity. The intestines were found to be inflamed and covered with an exudate, which could be washed off only with difficulty. By the advice of Dr. Pratt, who was assisting him, he employed the technique which had proved successful in my case. The peritoneal cavity was washed thoroughly, the peroxide of hydrogen being used, and the operation repeated. The abdomen was filled with saline solution and closed tightly. This patient, just before the operation, had had a pulse of 125 and a temperature of 103.5°. The day following the operation the temperature came down to 100°, and stayed down until three days later, when a temperature of 101.5° marked the beginning of the formation of a mural abscess. This abscess was opened, and from then on recovery was without

event. Both of these patients are strong, hard working young men to-day.

These cases, coming together in this way, impress me as being worthy of consideration. They belong to a class of cases in which the prognosis is never any too favorable. I believe that drainage in these cases is irrational because it does not drain, and because any foreign body must add to the already existing irritation. Filling the abdomen with saline solution I believe to be rational because it dilutes the poison, which is generated during the few hours immediately following the operation, and vastly increases the area of the peritoneum which is called upon to resist that poison.

In this belief I earnestly commend these thoughts to your consideration, feeling confident that if this method is followed some of those cases which now *almost* get well, will have the balance tipped in their favor.

APPENDICITIS: ITS TREATMENT—MEDICAL AND SURGICAL.

By Thomas B. Scully, M. D., of Oneida County.

The medical and surgical fraternity is engaged in quite a controversy at the present time as to the treatment of appendicitis. The outside world is looking on with considerable interest and if those not familiar with medical subjects were to follow this discussion they certainly would be in a quandary as to which course to adopt in case they had appendicitis.

You find arrayed on one side a class of physicians who persist in claiming that appendicitis can always be cured without surgical intervention and who cite case after case covering a period of several years, which they treated with other means than the knife, which has recovered and to-day walks the streets with the appendix in its usual place. We have also a class of surgeons who have placed themselves on record as refusing to operate on non-suppurative cases of appendicitis. Still another class advise operations in all cases of appendicitis. While we should respect the opinion of all our professional brethren we nevertheless should deprecate this hair splitting. I dare say that all of those present to-day have had cases and very severe cases of appendicitis in which they had unexpected recoveries, and it is in such cases that many of us have advised an operation, and it is such cases that will always be referred to when operation is suggested, as an argument in favor of non-surgical treatment of appendicitis. Those who advocate early operations are simply without any defense, when they are confronted with the foregoing state of affairs. Now, the question arises, What is the solution of this problem?

The answer I make is that, if more attention be paid to the cause of appendicitis, there will be less difficulty in concluding what course of treatment to pursue. And again, if the cause is understood the diagnosis would not be so difficult. Too often we hear the remark, there can be no question but that the diagnosis is correct, giving one the impression that it is not a difficult matter to make the diagnosis in appendicular trouble. Now, to my mind it is not by any means an easy matter to make the diagnosis, on the contrary, I think it a question requiring a thorough knowledge of the cause and of the comparative anatomy of the parts affected. In fact, on our knowledge of the comparative anatomy of the parts affected rests our differential diagnosis. Inasmuch as this paper is confined to the treatments of appendicitis I may take up the subject of differential diagnosis, but in order to make myself understood I must digress some, and touch on diagnosis and symptoms.

The first requisite in the management of this disease is its recognition. The symptoms vary so that it is very difficult to formulate a set of symptoms by which it may be recognized. For instance, the symptoms that are present in an acute attack differ materially from those in a patient who has had one or more acute attacks. An acute attack may occur without prodromata as is quite likely to be the case in previously healthy persons when as a rule the disease is ushered in with a very severe pain in the abdomen, vomiting, more or less fever and headache, and an accelerated pulse. The pain soon becomes confined to the right iliac region and there is considerable tenderness and rigidity over the right iliac fossa. Unfortunately the above set of symptoms give no line of distinction between a mild catarrhal appendicitis or the onset of an attack of the gravest type. Vomiting and nausea is looked upon by some as a very serious matter, but my experience has been that it has no direct influence one way or the other. I have observed

that vomiting is more apt to occur in cases of catarrhal appendicitis or in the appendicitis of those who suffered from occasional attacks of intestinal indigestion. I recall one case where I have attended the patient, a male, in five attacks covering a period of two and a half years and in each attack after suffering the most intense pain for about four hours he would vomit 3 or 4 times at intervals of about three-fourths of an hour, and then for 24 hours would have frequent watery discharges. During this period he was very sensitive directly over the appendix and the muscles in the right iliac region were continually on guard; about the 3rd or 4th day he begins to improve and in 8 or 10 days is well. Not long ago I witnessed two appendectomies by an eminent surgeon where the history of both cases tallied very well with the case just cited. When the appendix in each of those cases was removed it was found to be quite healthy but the caecum was seen to be deeply congested indicating the real trouble. At that time the thought occurred to me, Is not the condition of the caecum the cause of the pain and the other symptoms, instead of the appendix, and does not this afford an explanation for so many of those cases of appendicitis, so-called, getting well. Those are the cases where the much vaunted oil treatment comes into play, when in fact the principal element that has to do with a recovery is rest in bed combined with a simple light food, that nature may do the rest. The cause of this condition I will leave to another paper. As I stated before the question of the cause of appendicular trouble will, if given more thought, give us a key to the solution so far as diagnosis and treatment is concerned. The differential diagnosis between inflammation of the caecum and inflammation of the appendix, if well defined, would place us in a position to say with more certainty where to use laxative or cathartic to empty the colon, and an opiate to relieve the pain, and where nothing short of an operation will benefit the patient. I have ob-

served, in many of the cases I have treated to recovery and which I considered inflammation of the caecum or so-called catarrhal appendicitis, a considerable tenderness under the sternum, there did not seem much pain in the region of the umbilicus or in the right testicle. Consequently I have come to look upon pain, on pressure under and directly below the sternum, as very significant of inflammation of the caecum and am governed therefore to a great extent by this symptom in my treatment. I will not discuss the many modes of treatment laid down by various writers on this subject further than to say that in the use of purgatives we should be very cautious. They should not be given save in exceptional cases, after 24 hours from the commencement of the attack. I prefer sulphate of magnesia in ½ to 1 teaspoonful doses, given every hour until bowels move freely. In the giving of a saline cathartic we not only wash out the whole intestinal tract but also put it in an almost aseptic condition by cleaning away the toxines; its depleting action also reduces the inflammation. The latter is a very important point and conduces as much as any other one thing towards a recovery. A saline cathartic cannot do any injury if given during the first 24 hours. If the case is seen for the first time 24 hours after symptoms first appear, and if there is much nausea and vomiting or a history of constipation or of having partaken of some indigestible food, I use small doses of calomel combined with Sodium Bicarb, say calomel 3 grains, Sodium Bicarb 15 grains, make into 10 powders, one to be given every hour or half hour until bowels move freely. If on examination evidence of fecal accumulation is present an enema should be given. This enema should be hot and consist of turpentine 1 ounce, Magnesia Sulphate 2 ounces, Glycerine 2 ounces, and hot water 4 ounces, repeat every 3 hours until free movement occurs; or in many cases the giving of a copious enema consisting of 3 or 4 quarts of hot water and 2 to 4 ounces of Glycerine; let me add, we should

not trust the giving of the enema to any one save an experienced or tried nurse; if such an one is not to be had give it yourself; again always use a fountain syringe allowing the fluid to run in slowly with the patient lying on his left side. Externally, I use cold applications. I have found cold applications more beneficial than warm, and in using ice or ice water in a bag I do not have it very heavy or keep it on continuously. For the pain I do not hesitate to give morphin, but always in conjunction with strychnin. I do not agree with those who denounce the use of morphin in the early stage of appendicitis, having seen the most gratifying results from its administration when combined with strychnin. The locking up of all secretions and the arresting of paristaltic actions of the intestines claimed for morphin is overcome by strychnin. On the other hand, I think it a great mistake to let the patient suffer intense pain, particularly and especially when the case becomes an operative one, as the patient will rally quicker if not exhausted from pain. I believe we should quiet the pain and calm the patient; so doing does not mask other diagnostic signs. The lessening of pain does not necessarily diminish the fever nor materially affect the pulse if it is a typical case of appendicitis with a tendency towards pus formation. If, on the contrary, the fever and the pulse rate diminishes the probabilities are that the disease has been arrested and your patient will recover. Always give the morphin and strychnin hypodermically, and for an adult give morphin $\frac{1}{4}$ of a grain, strychnin one-sixtieth of a grain. If in conjunction with the symptoms mentioned we have an increased temperature and an accelerated pulse, I give one-third of a minim of a German tincture of Aconite and 1 to 2 minims of Fluid extract Veratrum-Viride every half hour until active diaphoresis begins and the pulse becomes softer and slower, and then continue these remedies at intervals of an hour.

This may seem a peculiar treatment to the orthodox members of the profession, but all I have to say to you is, try it.

I am of the opinion that in all cases of appendicitis not showing signs of amelioration after the first 24 hours we should call in a surgeon. The recognition of the time when in order to save the life of your patient, medical interference should be superseded by surgical intervention makes this combination of medicine and surgery of prime importance. If, after the first 24 hours there is no increase in the symptoms, the patient will probably convalesce without surgical intervention, and in two or three days the attack will subside. But, if after the first 24 hours the symptoms are not abated and we can satisfy ourselves that the disease is progressing an immediate operation should be advised. If an interval of four to six days ensues after the attack first shows itself and the symptoms from the beginning have been progressive I would hesitate about operating at that time, unless there was positive signs of perforation. By this statement I do not wish to be understood as advocating delay; on the contrary, promptness in operating is more of a necessity than delay justifiable. Richardson has said, "There is a period in all of these cases when it is too late for an early operation and too early for a late operation." This period is the time when the wall of lymph which separates the intestines and the remainder of the peritoneal cavity from the appendix is forming, and the risk of breaking down this wall of adhesions, thereby causing an infection of the whole peritoneal cavity, is very great, therefore, we should hesitate about operating at this time unless there are some very urgent indications for so doing. I am firmly of the opinion that in recurrent cases we should advise the removal of the appendix in the quiescent period succeeding the attack. I am also of the opinion that we should remove the appendix whenever possible, as it will only occasion a subsequent attack, which may prove fatal. Still there are

cases where the adhesions that bind down the appendix are so extensive that to insist on removing it would be to expose the patient to unjustifiable danger at that time, and it had better be left for another operation when the conditions may be more favorable. As to a choice of which incision to make in operating I do not think it matters very much, all having their advantages and disadvantages. Of course we all prefer the smallest incision possible with a view of obviating a ventral hernia. I prefer the incision as described by McBurney, providing I am convinced that drainage will be unnecessary, if I think drainage will be necessary I make the same incision, but continue it down to the peritoneum. When you have gone through the peritoneum and exposed the intestines there is not in my opinion any condition requiring greater skill or delicacy of touch. All precautions should be taken to protect the general peritoneal cavity from infection. As regarding the possibility of post-operative hernia I do not think a one and a half inch incision affords any more protection than a two and a half inch incision. I am also of the opinion that it is not due so much to the length of the incision as it is to the manner in which it is closed. My opinion is that too many sutures are used in approximating the layers of muscular tissue and peritoneum. Make the sutures sufficiently tight, but do not cut off the circulation and nutrition and subsequently have imperfect union and consequently hernia. I never trust to sutures placed in the different layers of tissue. I take off the strain by putting in silkworm gut sutures from the under side of the peritoneum through it and the layers of the muscle, adipose and integument one-half to three-quarters of an inch on either side of the incision and after closing the incision bring the silkworm gut sutures together sufficiently tight to hold the tissues in their position, thereby acting as a support. In fact I have as good results, if not better, by just bringing

the edges of the peritoneum together with a continuous suture, after having put in the silk gut sutures, and then closing up the incision with the silkworm gut sutures, uniting the skin with interrupted cat gut sutures. In suppurative cases peroxid of hydrogen used freely and of full strength acts excellently; by it you can destroy pus as fast as you come to it, consequently the fear in the breaking up of adhesions is lessened. If the patient suffers greatly from shock the use of hot saline solutions affords great benefit to the patient and considerable relief of mind to the operator. It is really surprising how quickly they rally after a long and serious operation. Where the normal saline solution is used in the peritoneal cavity I leave as much solution as possible in the cavity at each operation. When it is desirable to circumscribe an infected area I prefer to use iodoform gauze prepared according to the formula suggested by Pryor in the New York Medical Journal, May 18, 1895. If gauze prepared in this way is not at hand, I prefer plain sterile gauze.

To sum up, if the patient is suffering intense pain, use morphine and strychnin to ease him, if there is vomiting and the patient is constipated give small doses of calomel combined with Soda Bicarb, or Sulphate of Magnesia. If an enema is required use the Magnesia Sulphate combination as mentioned before or enema of water and glycerine. For temperature and pulse give aconite and veratum, and if after twenty hours from commencement of the attack there is no indication of abatement advise operation.

DISCUSSION.

Dr. DeLancey Rochester, of Erie county, said that the treatment advised, viz.: sulphate of magnesia, morphia and strychnine, seemed very much mixed. If he were going to use morphine he did not wish to use the sulphate of magnesia. Moreover, the combination with strychnine, seeme wrong, because morphine was to quiet peristalsis. In his opinion, acute appendicitis should not be

operated in the acute stage, but should be treated with large doses of morphia— from half a grain to one or two grains—according to the method passing under the name of Alonzo Clark.

Dr. Rochester reported the following case: A boy of four years had been seized with severe pain in the abdomen, associated with a high temperature and a bounding pulse. Tenderness over McBurney's point had rapidly extended over the right side of the abdomen. A mass could be detected on palpation in the right iliac fossa. It was evidently an appendicitis of a very acute type. The boy had been given no laxatives, but, on the contrary, had been kept on morphine. One-fourth of a grain of morphia hypodermically had not affected him. The dose had then been increased until he took one grain and a half every four hours for a period of forty-eight hours. The symptoms had subsided, and the boy had recovered, but with an abcess in his side. He had then been operated and half a pint of pus evacuated. The abcess had been entirely walled off from the peritoneum. Two weeks later his appendix was removed; five perforations were found in it.

Another case a girl of fourteen years, suffered from vomiting, constipation and violent pain in the abdomen. There was great tenderness over McBurney's point. She had been given morphine, beginning with one-quarter of a grain and increasing until she received two grains every three hours hypodermically for seventy-two hours. The symptoms had subsided, and in the course of ten days she had been operated upon and the appendix removed. It was a case of catarrhal appendicitis. It seemed to him, therefore, that better results could be obtained in acute appendicitis by the use of morphine than by immediate operation. He had been unfortunate enough to see three cases, previously operated upon, who had died within twenty-four hours after operation. The morphine should be given in doses not simply sufficient to quiet the pain, but to reduce the respirations to four or eight per minute.

Dr. Eden V. Delphey, of New York county, said that it was not so much a question of "how to operate" or "when to operate" as "whether to operate." He had seen several cases which had served to illustrate this fact. The first, a young man aged twenty-five, had been taken sick in the afternoon; was seen in early evening. He had intense pain in the appendical region, rapid pulse and fever. He was given half a grain of morphia hypodermically, inhalations of chloroform during the paroxysms, and later, teaspoonful doses of the deodorized tincture of opium. In thirty-six hours he had returned to his work. The second case, a young man of about the same age, had six attacks in two years. He had been operated on and an appendix, one and one-quarter inches long, and of the diameter of an ordinary slate pencil, bound down by adhesions,

had been removed. The third case had been that of a young married woman who had had a nephritis with albuminuric retinitis as a complication of a recurrent appendicitis. She had been anxious for operation, but had finally been dissuaded. The fourth case, a young woman, he saw nineteen days ago. She had been taken sick about 3 o'clock in the afternoon while at work, he had seen her about 6 o'clock p. m. She was lying upon her back, knees drawn up, abdomen only slightly distended; tenderness and resistance in the appendical region; pulse 80 to 90; temperature normal; slight nausea. Operation advised, and refused, and in twenty-four hours she was dead. Dr. Delphey said that the rabid operator advised operation in all cases, but the third case mentioned would have undoubtedly died, as a result of the operation, from her complicating nephritis. The first case had gotten well without operation, while the second case would probably have done as well either way. On the other hand, the medical man who treated all cases by drugs, especially for the first twenty-four hours, would certainly lose a certain number of cases. Between these extremes there must be a happy medium, and while it was impossible to make hard and fast rules, a clear statement of the indications for and against operation, or medical treatment was needed.

Dr. Leroy J. Brooks said that in country practice everything else must be tried before operation. It was, therefore, common to find an already existing septic peritonitis on opening the abdomen, so that the use of saline solution and a glass tube or a Mikulicz drain seemed to him the only available measures. In such a case the moment one undertook to go beyond the simplest measures death was almost certain to ensue.

Dr. MacLaren said that if the washing were done with the long irrigator nozzle, the stream were constant and the viscera were agitated with the fingers, the abdomen could be thoroughly flushed very quickly. It would not take any more time than the introduction of drainage.

Dr. Scully, in closing the discussion, said that there was no real inconsistency in his use of morphine, strychnine and the sulphate of magnesia. Usually morphine was given with atropin, and it was the atropin, in his opinion, which locked up the secretions. The cleaning out of the intestinal tract seemed to most physicians the great desideratum in these cases, and this could not be done by large doses of morphia alone. By giving strychnine with the morphia the nervous irritability would be allayed, and neither peristalsis nor the secretions interfered with. In rural practice it was not always possible to insist upon immediate operation, and in

many cases in which operation had been refused he had been surprised that recovery had taken place under the medical treatment just outlined by him. Reference was made to a physician in this State who claimed to have cured a great many cases of appendicitis simply by the administration of oil—in other words by an eliminative treatment. Sulphate of magnesia was particularly useful for this purpose.

CHOLANGIOSTOMIE—TWO CASES RECOVERING.

By B. Merrill Ricketts, Ph. B., M. D., Cincinnati, Ohio.

To Knowsley Thornton (Brit. Med. Journal, London, 1897) the honor should be given for having instituted and made an incision through the capsule and normal hepatic tissue into the intra-hepatic bile ducts for the removal of gall stones. Boudouin (Progrès Med. Paris, April 25, 1896) describes this operation under the name of " Cholangiostomie."

Cholangiostomie involves more the anatomy than the physiology of the liver, as the great danger lies in opening its vasculatory system and subsequent loss of blood. The weight of the liver is about one-fiftieth that of the human body, and contains from 85 to 100 cubic inches of hepatic tissue,—more tissue than any other organ. Its normal shape and size vary materially in the female,—perhaps due to habits and wearing apparel. To be brief we will confine our remarks to the liver, its capsule and biliary ducts. The capsule because it is necessary to incise it before the hepatic tissue can be attacked, and too because of its great resistance to pressure due to the accumulation of fluid or other pathologic changes within and without.

Dr. J. E. Weber punctured the liver for hydatids after incising abdominal wall down upon the capsule (N. Y. Med. Times, May 1852: Recovery). Dr. F. A. Aran at St. Antonie Hospital, Paris, trocarred the liver and injected solution of Iodin. Recovery. (Foreign Med. Chi. Review, Jan'y, 1855: American Ed., p. 211.) Hepatostomy by means of the trocar was done by Dr. J. C. Cameron (Lancet, June 6-13 and Aug. 8, 1863) to evacuate pus. Begin and Recamier were ridiculed by the leading surgeons of their day (1882) for suggesting the use of scalpel for opening an

hepatic abscess. The suggestion for incising the gall bladder for the purpose of removing concretions impacted therein, seems to have been made during the last century by a French Surgeon. The Bull-Janeway case, June, 1884, was among the first for incision. Trans. N. Y. S. M. Ass'n, Vol. 1, 1885, p. 418.

The object of this paper is to consider hepatostomy for the sole purpose of removing biliary concretions contained within the intra-hepatic bile ducts and bladder, and to make brief mention of some observations made upon the hardened human and dog liver together with two hepatostomies and their subsequent results upon the human being, one for exploration, the other for the removal of a concretion within the biliary bladder. While incision into the liver for the evacuation of pus has become an established procedure, incision into hepatic tissue for the extraction of concretions has been limited to but three or four cases, so far as can be determined.

In the first (hepatic abscess) the liver was softer and more congested than in the second (concretions within the biliary tract, or located,—cystic or otherwise—within the body of the liver). Again, it is highly probable that the wall in all hepatic abscess cavities has been so constructed as to prevent to a great degree, interstitial hemorrhage which is so much dreaded in incisions into the liver. The introduction of gelatin into the intra-hepatic vesicles and biliary tract is the best means of demonstrating their location and to show how easily the latter may be reached without serious injury to the former, the operations herein mentioned were made. Intra-hepatic ligation could be resorted to if necessary in cases of extreme hemorrhage.

The conditions under which it may be necessary, are

First, when the gall bladder is contracted upon one or more concretions or when it is desirable to explore an atrophied biliary cyst that cannot be sutured within the ab-

dominal incision, and where cholecystectomy is unnecessary or inadvisable.

Secondly, when lobe or liver is too large from any cause to allow the gall bladder to be brought into the abdominal incision for suturing.

Thirdly, when one or more concretions have escaped from the biliary tract into the liver substance.

Fourthly, where one or more concretions have become encysted or impacted within the intra-hepatic duct (a condition perhaps more common than generally supposed).

Fifthly, when the common and cystic ducts have become occluded by new growth or when the common duct has become occluded by new growth and the gall bladder atrophied to such a degree as to prevent cholecystenterostomy or cholecystotomy. (Possibly this condition may be relieved by a hepato-duodenostomy.)

Sixthly, when, before or after opening the peritoneal cavity, it is found that an hepatic abscess has ruptured into the biliary tract filling the gall bladder with pus that cannot freely escape through the common duct.

Especially is it justifiable as the seat of abscess is oftener in right lobe. It may be best to have two sittings in either event; the object of the first to reach the capsule; the second to enter the liver tissue after sufficient time has been given for the cut edges of the peritoneum to become adherent to the capsule,—requiring perhaps seventy to one hundred hours.

First Case.—Mrs. M. H., applied about April 1st, 1898, with history of some hepatic trouble of two or more years' duration. Had been variously diagnosed as abscess, cancer, appendicitis and gall stones. She was about six months pregnant and no definite knowledge was gained by an examination at that time. She was poorly nourished, almost emaciated, and a well defined icterus was present. She gave a history of irregular attacks of chill, fever, pain,

vomiting and sweating. A number of those attacks occurred previous to the birth of the child, July 25th, 1898. The labor was ushered in by one of the attacks just mentioned, but it was not otherwise unusual. After the abdomen was cleared an enlargement was discovered, seemingly from the right inferior portions of the liver and extending below the crest of the ilium on the right side; semisolid and at times very tender. After this the attacks became more frequent and severe until the time of the first operation, November 29, 1898. Her recovery was rather slow and the skin remained of an icteroid hue with a recurrence of the attacks of pain, etc., but not so severe as before the operation. Shortly before the second operation a large abscess formed and discharged in the line of incision over the site of the gall bladder. Since the last operation she has been entirely free from jaundice; has gained in flesh and strength and the great organs seem to be acting normally. However, about a week ago (August 15, 1899), another abscess formed and discharged at site of former one. It has now (October 27, 1899) been closed several weeks.

First Operation.—On November 29, 1898, under chloroform a perpendicular incision was made through the abdominal wall at a point corresponding to a normal gall bladder. A stone about the size of the average nutmeg was found therein, as was also a small round stone in the common duct. The latter escaped detection and was supposed to have entered the duodenum. Again it was found only to escape again apparently into the duodenum. It could not thereafter be found. Attention was directed to the cystic stone. The liver being so broad and thick and the bladder so much atrophied, it was impossible to bring the bladder into the abdominal incision. It being impractical to open the biliary duct from within the peritoneal cavity and thereby compelled to rely upon drainage through it, an incision was made into the anterior capsule of the lobe

through the hepatic tissue, entering the gall bladder through its hepatic attachments. With the left finger upon the gall bladder the point of the knife could easily be detected. The bladder once entered by a plunge of the knife the opening through the liver was enlarged by introducing the finger simply lacerating the hepatic tissue that hemorrhage might be less severe. The stone was then pushed out of the bladder by the finger upon its peritoneal surface, and grasped with forceps to complete its extraction.

The hemorrhage was slight and easily overcome by gauze packed into the hepatic incision and allowed to extend through the abdominal opening for drainage. Large quantities of pus and bile continued to escape for several weeks, when the wound closed. Her condition improved, with now and then a rigor with pain, which was relieved by the free discharge of bile and pus on opening the fistula.

Second Operation.—May 25, 1899, for removal of stone in common duct. An incision was made between the media-line and the border of the liver. Adhesions were extensive, between liver, gall bladder, common duct, duodenum, pancreas and stomach. No stone was found. The liver having receded to its normal size and shape very much facilitated the work. The atrophied bladder was opened and the common duct explored with the sound. Complete occlusion of the cystic duct prevented such being done.

The bladder was sutured, and the abdominal wound closed. The tract of the old sinus was not severed, that any future drainage might be through it, which has once subsequently occurred.

The stone had evidently escaped at the time of last attack, three weeks before (April 15, 1899), as the stools have been normal in color since that time. The icterus and pain have disappeared. She has gained flesh and enjoys life as on former occasions, with the exception of an occasional reopening of the fistulous tract externally.

No. 2.—Man, 18 years, white. Ruptured gall bladder. Liver much enlarged. Incision through capsule into center of right lobe for exploration. Common duct occluded by new growth, perhaps tubercular. Recovered and died five months later as result of an attempt to make a Hepato-Duodenostomy. Extension general tuberculosis of peritoneum and lymphotics being present.

THE ADMINISTRATION OF NITROUS OXIDE WITH AIR OR WITH OXYGEN.

By Thomas L. Bennett, M. D., New York County.

It is surprising that an anaesthetic possessing such remarkable qualities as nitrous oxide should not long ago have come into very general use in surgery, and that it has not done so is probably due in most part to an exaggerated opinion of its limitations, a lack of knowledge of its possibilities, and to the comparative absence of individuals skilled in its administration. While it is true that nitrous oxide has rather extensive limitations as an anaesthetic for surgical purposes, there remains a field of considerable extent in which its use is attended with the utmost satisfaction in the majority of cases. The distinguishing characteristics of the narcosis by nitrous oxide as compared with that by chloroform or ether may be considered in two groups, the favorable and the unfavorable. Briefly stated they are as follows:

Favorable Characteristics:—

1. The absence of unpleasant or suffocative odor.
2. The rapid action.
3. The absence of excitement, struggling or great stimulation.
4. The comparative freedom from after effects.
5. Safety.

Unfavorable Characteristics:

1. The asphyxial phenomena.
2. The light form of narcosis.
3. The difficulty of the administration.

Favorable Characteristics:—

1. The slightly sweetish odor of nitrous oxide is not unpleasant to most patients and is certainly not suffocative. The feeling of suffocation complained of by some patients is in most instances due to the mechanical obstruction to respiration resulting from breathing through the tubes and valves of an inhaler. Most modern gas inhalers, as Hewitt's, Barth's and the writer's, are made without tubes to breathe through and with apertures for the flow of gas, so large as to offer little or no resistance to respiration. The lack of available oxygen in nitrous oxide can hardly account for any suffocative sensation, since loss of consciousness is too rapid for this to be possible.

2. A more rapid action than that of nitrous oxide could hardly be desirable, consciousness being lost in ten or fifteen seconds, as a rule, and deep narcosis being present in about one minute.

3. Excitement, struggling and excessive stimulation are among the most undesirable phenomena of ordinary ether or chloroform anesthesia; they exhaust some patients and throw a good deal of stress upon the circulation and respiration. The possible harmful effect of this in weak patients is obvious, also in those having abnormal conditions of the heart, lungs or vessels, or other conditions in which struggling might mechanically do harm. The writer has seen a circumscribed abscess from appendicitis, rupture into the peritoneal cavity during such struggling. The complete absence of this feature in the narcosis by nitrous oxide is striking.

4. As compared with ether or chloroform the after effects of nitrous oxide are very slight. Headache, drowsiness, slight sickness, emotional disturbances and hysteria are not uncommon after administrations lasting more than a few minutes and very rarely a patient will be quite sick for several hours. I have known a patient to yawn every few mo-

ments for twenty-four hours after a short gas administration. I have frequently noted a very slow, full pulse (50) after prolonged administration of gas and oxygen. When sickness does follow the inhalation of gas it is usually of such short duration as to almost pass unnoticed. There is no disagreeable after taste as during ether recovery. Cerebral hemorrhage has occurred after nitrous oxide. I have been unable to find any reference to disturbances of the heart, lungs or kidneys following nitrous oxide and from my own experience I should say that such disturbances were very rarely if ever present.

5. There is no question of the astonishing safety of nitrous oxide for such momentary operations as tooth extraction. For this purpose it has been given many million times with very few deaths that could rightly be attributed to the gas.

There are no data at present as to its safety in prolonged operations, but I am convinced that the *reasonably skillful* administration of gas with air or with oxygen in these cases will prove very safe, although considerably less so than for the momentary cases. If unskillfully administered, I believe nitrous oxide to be a more dangerous anaethetic than ether and possibly chloroform.

Unfavorable Characteristics:—

1. Most of the unfavorable features of nitrous oxide narcosis depend upon and are proportionate to the deprivation of oxygen and consequent asphyxia which attends the administration; such asphyxia being manifested by cyanosis, interrupted, jerky, exaggerated and sterterous respiration, general muscular rigidity, jactitations or convulsive movements and, if the gas be continued, by spasm of the respiratory muscles and obstruction of the upper air way, producing cessation of respiration.

2. Nitrous oxide narcosis is at best a considerably lighter form of that state than is produced by ether or chloroform, so much so that it is frequently impossible to do those operations which require very profound anaesthesia with any degree of satisfaction under this agent.

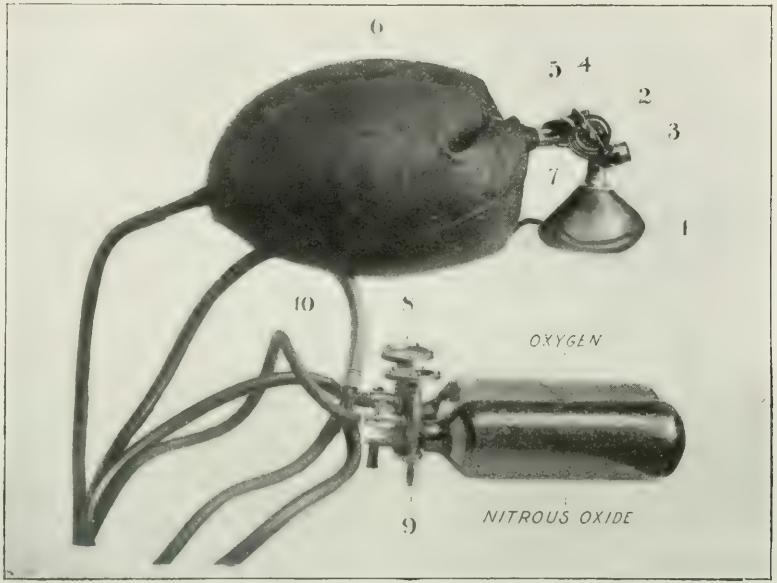
3. The prolonged administration of nitrous oxide is difficult, because the stages of the narcosis are exceedingly short and there is but a very narrow margin of workable anaesthesia between an incomplete degree on the one hand and the approach of asphyxia on the other. Great watchfulness of the patient is essential and in order to maintain a fairly smooth narcosis, considerable experience is necessary. The difficulty of administering nitrous oxide for prolonged periods with entire satisfaction and safety is so great, and the percentage of cases in which it is preferable to other anaesthetics is so small, that in my judgment, its use in this way will not become very general, but will remain largely in the hands of the professional anaesthetist or of those who administer anaesthetics frequently.

We have seen that deep narcosis is present after about one minute of nitrous oxide inhalation. If air has been rigidly excluded during this time we have also present a marked degree of asphyxia. Should the administration proceed, complete asphyxiation would appear within a very few seconds and a little later, unless air was admitted, death would occur. On the other hand, if a considerable but not excessive amount of air be permitted to enter with the gas, the patient would not pass quietly into deep narcosis, but would soon show signs of excitement during which he would present more or less complete analgesia, without any evidences of asphyxia. Now if gas be administered with air, the latter small in amount at first and gradually increasing as the inhalation proceeds, or if single complete inspirations of air be interspersed at intervals between several inspirations of gas, a good degree of narcosis will soon appear with

little or no excitement in the early stages and with moderate absence of asphyxial symptoms. The required depth of anaesthesia having been attained, it is possible to maintain it for an indefinite period by continuing the administration, meeting the approach of asphyxial signs by the admission of more air and the signs of light anaesthesia by less. In order that this may be carried out with satisfaction it is necessary to have the air supply a definite quantity and under perfect control, as by means of an air tap so arranged that when it is closed pure gas is breathed; when fully opened, the gas is fully cut off and only air is allowed, intermediate positions of the tap allowing proportionate admixtures of gas and air. The face piece must fit perfectly and there must be no leakage of air at other points in the inhaler, if so the calculation is upset and the results will be less satisfactory.

Patients with beards are troublesome in this respect but much may be done to overcome the leaking in of air in these cases by thoroughly wetting the hair about the mouth with warm water before the face piece is applied. It is possible to produce a fairly deep and quiet narcosis by the administration of nitrous oxide and air in this way, but the asphyxial symptoms are often great and the narcosis is but fairly satisfactory. The difficulty lies in the fact that in order to provide the patient with sufficient oxygen to obviate asphyxia, a large percentage of air is necessary, and this so dilutes the nitrous oxide that proper narcosis does not take place. It has been found that average patients do very well with ten or twelve per cent. of oxygen with nitrous oxide, but it will be seen that in order to furnish this oxygen by means of air it would be necessary to admit about 50 per cent. of the latter, thus leaving but 50 per cent. of nitrous oxide for purposes of anaesthesia, and this is not enough. From the foregoing it is evident that in mixtures of nitrous oxide

with pure oxygen we have the solution of the problem. Gas with oxygen has been used successfully as an anaesthetic for more than twenty years, and in the beginning was the outcome of the elaborate and ingenious experiments of the late Professor Paul Bert, of Paris. In his earlier investigations, Bert considered it necessary to employ increased atmospheric pressure in his administrations of gas and oxygen. He believed that at the ordinary atmospheric pressure 100 per cent. (or pure) nitrous oxide was necessary to produce anaesthesia, so that it would not be possible to dilute it by the addition of air or oxygen to prevent asphyxia and still have anaesthesia. Having found that the effect of gases depended upon the tension at which they were breathed, his experiments were conducted in accordance with the proposition that 100 per cent. of nitrous oxide being necessary at one atmosphere of pressure, at two atmospheres, 50 per cent. of gas would produce the same degree of saturation of the blood and the same anaesthesia, thus allowing a 50 per cent. dilution with air, which, at the increased pressure also supplied the patient with the normal amount of oxygen. By mixing oxygen instead of air with nitrous oxide a far greater proportion of the latter was possible and consequently less elevation of barometric pressure was required. By administering a mixture of about 83 per cent. nitrous oxide and 17 per cent. oxygen under an atmospheric pressure increased by 1-5, Bert in 1878, produced the most perfect anaesthesia in dogs and continued it as long as one hour. There was no asphyxia, the blood preserved its bright red color and its full proportion of oxygen. The heart and respiration were normal. The year following, the method was tried upon the human subject with such great success as to attract widespread attention. The impracticability of employing increased atmospheric pressure was so great, however, that Bert finally experimented with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NITROUS OXIDE

these gases at the normal pressure and was successful in narcotizing the lower animals. Others took up the method, notably Dr. Hillischer, a dentist of Vienna, and Dr. Frederick W. Hewitt, an anaesthetist of London. Dr. Hillischer administered gas and oxygen for dental operations in over 15,000 cases with great success, the narcosis being so sleep like that he termed the mixture "Schlafgas." Dr. Hewitt has spent many years investigating this subject and in perfecting a regulating inhaler for the administration of the gases in the varying proportions that are necessary at different stages of the narcosis. He has given us an apparatus with a regulating mechanism so perfect that nitrous oxide may be given pure or plus from one up to thirty parts of oxygen.

A typical administration of this apparatus may be described as follows: The bags having been emptied of air and then filled about three-fourths full of their respective gases, the face piece is applied with the index pointing to air, which the patient now breathes through the inhaler. When it is seen that the face piece is well applied the index is turned at once to one or two, where two or three respirations are allowed; the index is now moved forward a number at a time and at each number two or three respirations are permitted. When the index has reached six or eight about a minute has elapsed as a rule and there should be signs of moderate anaesthesia, the breathing should be slightly stimulated, the patient quiet, the color good and the conjunctiva somewhat insensitive. Under these circumstances the inhalation should proceed, moving the index more gradually forward till signs of complete anaesthesia are present. If the oxygen has been turned on too rapidly signs of light narcosis will appear, the breathing will become shallow, there may be excitement, phonation, movement or retching. In this event the index must either re-

main stationary till the signs pass off or must be turned back a point or two for a number of breaths and then forward more slowly. When a satisfactory narcosis has been reached the patient's condition is usually as follows: The respiration is slightly stimulated, the pulse is normal or slightly stimulated, the color is normal or slightly flushed, the eyeballs are usually rotated downward, and fixed, the conjunctiva is insensitive and the extremities are relaxed. The narcosis may be continued as long as required, the administration being governed by the principles already mentioned. It will be found that as the inhalation proceeds, a gradual increase in the percentage of oxygen will be necessary. All changes in the proportions of the gases should be made gradually if possible. Sudden changes produce marked effects which are apt to interfere with the smoothness of the narcosis. The bag should be kept about two-thirds full and equally distended throughout the administration.

Gas and oxygen is unquestionably the best and safest form of nitrous oxide anaesthesia. It possesses all of the favorable characteristics of the latter and is to a great extent free from the worst of its unfavorable features, i. e., the asphyxial element, to which may be attributed practically all that is dangerous and unpleasant in ordinary nitrous oxide anaesthesia. The unfavorable characteristics of gas and oxygen are as follows:

1. Difficulties, in convenience and expense of the administration.

2. Light form of narcosis.

3. Failure to procure satisfactory anaesthesia, in a small percentage of cases.

1. Gas and oxygen is vastly more difficult to administer satisfactorily than is chloroform or ether and this is due to the fact that the method presents a great number of techni-

cal details which require considerable experience and the closest attention. It is practically impossible to move the patient after this anaesthetic has been started without disturbing the narcosis. It is therefore necessary to have the patient upon the operating table before beginning, and any other than the supine position renders the administration too difficult to be practicable. The apparatus is large and is apt to be in the way if the operation is about the head or neck. It is necessary to protect the tubes through which the gases flow from pressure. If stepped upon they will burst, as I have several times found out. The cost of a long administration of gas and oxygen is considerable compared with ether or chloroform. Five dollars' worth of the gases not infrequently being consumed.

2. While the narcosis may be carried to a deeper degree with gas and oxygen than with gas alone, it is occasionally not deep enough and this is very especially true in reference to rectal and abdominal operations. The abdomen is peculiarly apt to remain rigid, even though the narcosis is deep and free from signs of asphyxia, and gas and oxygen is not to be recommended for intra-abdominal operations, except in cases where the advantages of this form of anaesthesia more than offset this particular disadvantage.

3. Failure to produce satisfactory anaesthesia is exceedingly rare and is very apt to be the result of faulty administration. I am convinced, however, that there are patients who, with fairly skilful treatment, will not pass into that quiet, deep narcosis which is desirable. These patients probably belong to the class that take anaesthetics badly, requiring large doses and showing marked resistance to the action of the agent used.

The Choice of Gas with Air or with Oxygen as the Anaesthetic.

The limitations above noted in regard to the scope of nitrous oxide for surgical operations indicate in a way its

field of usefulness. In my judgment, however, the greatest indications for the employment of this form of anaesthesia are to be found: 1. In patients who are more than usually endangered by ether or chloroform, by reason of their general physical state or on account of the presence of some special pathological condition. Examples of this class are found in very weak patients, in the very aged and in those presenting active lesions of the lungs, the kidneys or the heart. 2. In operations that are so short or so trivial as to render the effects of ether or chloroform out of proportion to the case. 3. In patients who have previously suffered unusually from the effects of ether or chloroform and who have great dread thereof. The following list of cases from my personal records may be of interest as indicating the possibilities of this anaesthetic:

Amputations: Arm, for extensive necrosis of hand. Breast, for carcinoma, with removal of the axillary glands. Toe, for gangrene.

Curetting: Uterus, sinuses, abscesses, etc.

Excision: Carbuncles of neck, leg, etc.

Incision: Abscesses of neck, leg, breast, vulvo-vaginal, etc.

Laparotomy: Appendicitis, exploration, ventro-fixation.

Plastic operations of face.

Suprapubic cystotomy for stone.

Many cases of the following: Examinations, painful dressings, suture of wounds, circumcision, ligature of hemorrhoids, anal and vaginal dilatations, breaking up joint adhesions, stretchings in orthopedic cases, etc.

The time of operation in these cases ranged from a few seconds to ninety minutes. The ages of the patients ranged from below one year to eighty-four years.

DISCUSSION.

Dr. Marcy asked for further information regarding the administration of pure oxygen gas transmitted through chloroform or ether.

Dr. Goldan, of New York county, said that the Hewitt apparatus was satisfactory, but had been constructed primarily for use where the anaesthetic was required only for a short time. In gas and air anaesthesia, after becoming experienced, it was possible to induce prolonged anaesthesia with very little cyanosis. He was positive that the degree of cyanosis depended upon the experience of the administrator. The longest period he had maintained narcosis with gas had been two hours, and with the mixture of gas and oxygen, one hour and thirty minutes. In both anaesthesia had been perfect. The anaesthetizer must devote his entire attention to the administration of the anaesthetic. In administering the mixture of gas and air his method was to have the bag filled with gas, but not too tensely. The patient was encouraged first to breathe deeply, and after a few respirations it would be taken without trouble—indeed, unconsciously. He had attempted to determine the sensations in physicians taking it, but had found it impossible because of the rapidity with which unconsciousness supervened.

Dr. DeLancey Rochester, of Erie county, said that in most hospitals the anaesthetic was administered by the junior member of the interne staff, yet, we had been informed that considerable experience with the administration of nitrous oxide and its mixtures was necessary. For this reason this mode of anaesthesia would be out of the question in most hospitals; and in rural districts it was difficult to obtain the nitrous oxide gas. For small operations he failed to see the advantages of the nitrous oxide over the local use of cocain.

Dr. Bennett, in closing, said that he had never passed oxygen through chloroform, although he had often administered oxygen with chloroform and ether where it seemed to be indicated. He had not seen any great advantage in ordinary cases. In the usual administration of chloroform one or two per cent. at most were administered, and, therefore, only one or two per cent. of air were excluded by the chloroform; the remaining 98 per cent. of air would furnish sufficient oxygen. He did not believe that oxygen itself was an antidote for any of the dangers of chloroform. There was no reason for using oxygen with ether, as a routine practice, for, in ether narcosis there should be a sufficient air supply to give the necessary quantity of oxygen. A person well versed in the administration of anaesthetics could give gas very well if sufficiently instructed regarding the danger signals.

"VARIOLA."

By Gray Goodwin Holladay, M. D., Portsmouth, Virginia.

Has variola from the frequency with which vaccination has been practiced for many years or from some other cause or causes become so modified as to be scarcely recognizable by the descriptions given of it in any of the standard works?

During the past year variola or a disease so-called has been raging in that part of Virginia in which I live and in fact in almost the whole state. In the city of Portsmouth there have been 373 cases, 52 cases among the whites and 321 cases among the negroes; in Norfolk City there have been 851 cases, 781 cases among the negroes and 70 among the whites. In Norfolk county there has been a far larger number of cases than in both the other places together but the exact number I do not know. Of the three places, the disease first appeared in the county, then in Norfolk and then in Portsmouth. In the total number of cases (1224) there have been 21 deaths, in Portsmouth 3 deaths among the whites and 4 among the negroes, in Norfolk 14 deaths among the negroes and 1 among the whites. The mortality in the two places and among the two races has been about .017 per cent. A mortality which is far below anything given as the mortality in any of the standard text-books.

The disease as it has existed in Portsmouth, and I believe it to have been about the same in both the other places, has been of a very peculiar type, leading many of our older physicians who have had a large experience with variola to doubt the genuiness of this disease. In a large proportion of cases the course would be about as follows: Either with or without a day or two's indisposition an eruption of "bumps" (usually papules) would appear on the face, body,

limbs and notably on palms of the hands. On the face they appeared on the chin and around the corners of the mouth especially, fewer on the forehead. These would sometimes come out after the persons had retired for the night without their having had the slighest indisposition or warning. As a rule the patients would say that the eruption did not all come out at once but would in many cases come out all during the day and night and in some cases during the second day. The eruption was often seen in the different stages on a patient, sometimes finding papules, vesicles and pustules at the same time.

Where there were premonitory symptoms they were usually as follows: severe headache,aching in the limbs and slight fever. Backache was usually not prominent nor was nausea and vomiting. Patients with these symptoms were frequently sick one day, the trouble diagnosed as "gripy" and were discharged on the second day feeling well; on the third day, although it was sometimes on first, second or fourth day, they would notice a "breaking out."

As a rule the patients were not sick enough to be confined to the bed and in many cases were not sick enough to cease work until compelled to do so by their employers or the health authorities. Even very small children, some under 2 years of age, I have seen who were not sick before the appearance of the eruption nor during the whole course of the disease were they feeling too badly to be playing around the floor—and this in spite of the fact that they were unvaccinated. Some domestic servants had the disease, but as the eruption was almost entirely hidden by their clothes they did not cease work a day—nor did I hear of the disease being communicated in that way. I have seen whole families of negroes in the county that had had the disease, but as they were not sick their employers did not know it and they did not lose a day from their work in our truck fields. Yet when

I saw them they showed the unmistakable signs of having had the disease.

Quite a good number of the patients sent to the Hospital for Contagious Diseases were what were called "volunteers," that is they were persons picked up on the street who did not know that they were sick except that they had a "breaking out," and volunteered to walk to the hospital—a distance of over three miles. The patients did not require nor take any medicine in many cases other than an occasional cathartic.

In the whites after recovery there was usually a pinkish or reddish spot to show where there had been a pustule, and in the negroes a black or brownish spot or elevation, surmounted with a scab or crust. Recovery without pitting was the rule, although in many cases pits were left. Many cases did not pustulate but went from vesicle to scab, hence probably the various names the disease has gone under as: "African Scab;" "African Scale;" "Asiatic Scale;" "Cuban Itch;" "Winter Itch;" etc., etc. Usually itching was not greatly complained of. Fever was frequently conspicuous by its absence, and when present was not usually above 100-101.5 F. It was, however, not in proportion to the eruption, for in some cases with a very profuse eruption there would be little or no fever while others with little eruption would have high fever. One physician tells me of a case in a boy who had ten thousand (an over estimate, I think) pustules on him and yet his temperature was never above 100 F. The same man tells me of another case where the patient had few pustules but whose temperature for several days was 104 F. The boy's mother who also had it never considered herself sick a day, having only about a half dozen pustules on her entire person. In a family of three two had been successfully vaccinated, one had never been vaccinated yet she had the disease in the mildest form possible and one of the others had it very severely.

The fever when present before did not by any means always fall when the eruption appeared, and there was frequently if not usually no secondary fever. The scabs after the drying up of the pustules had the appearance of being pasted on in the centre and loose around the edges. In many cases the pustules or vesicles collapsed upon being pricked and that had in many cases no areola I frequently noticed.

A better description of the eruption in our epidemic could not be written than the following: " In a typical case several vesico-papules, vesicles, or vesiculo-pustules make their appearance simultaneously or in rapid succession upon the face, face and scalp, or face and fingers, or upon all these various parts. At first small they tend to increase in size, becoming decidedly flattened, with, in many lesions, a sinking in of the central portion; there may be even distinct umbilication. They are superficial, and, as a rule, are without conspicuous areolae. They usually attain the diameter of a pea or a dime (ours were rarely as large as a dime) and when close together, as often noted when about the mouth and chin, coalesce and form one or more irregular patches. Several days after the appearance of the lesions they begin to dry to thin waferlike, granular, yellowish crusts, which are but slightly adherent, and later on when the edges have commenced to loosen, have the appearance of being imperfectly pasted on. The crusts soon drop off leaving reddish spots which soon fade away. The whole course of the disease is from ten days to two weeks." This—a description of Impetigo Contagiosa as written by Prof. H. W. Stelwagon, for " Morrow's System of Genito-Urinary Surgery and Dermatology," is, as is said by several strong advocates of the variola theory, to be an almost perfect description of the eruption as we have been having it; the resemblance has certainly been most striking.

Vaccination, if this disease be Variola, has either greatly modified the disease or else it has lost some of its former efficiency, for it was by no means rare to see patients suffering from "variola" who had only recently been successfully vaccinated. I have seen what I believe to be not rare, persons just recovered from variola successfully vaccinated and what I believe to be very rare, patients in the eruptive stage of variola to be successfully vaccinated; again I have seen a person with variola vaccinated and show no effects from it until their convalescence from variola, when their arm would begin to "take."

In some of our cases there was high fever and in some, notably in the fatal ones, marked throat symptoms due to the eruption which extended well down into the larynx.

Complications in the cases in Portsmouth were rare, in Norfolk they were far commoner and were serious, I am told.

This disease as we have had it has been contagious, but nothing like as much so as I was taught to believe variola to be, not even among the unvaccinated. In one house I found that a patient had been removed suffering from variola, and yet 27 days later when I was there no new case had developed, although there were five children (from 1 to 10 years of age) and two adults in the house, all of whom had been thrown in intimate contact with the patient and none of them had ever been vaccinated. I found this to be the case in many other houses, except that there were usually not quite so many persons in a house. I saw one case where a mother had what I believe to have been genuine variola. Her nursing baby, two weeks after having been successfully vaccinated, and over four weeks after the appearance of the disease in the house, had a "breaking out" which I am equally positive was not variola, yet both were called variola.

Pregnant women went on to term, although some did miscarry. One man had variola twice within the year, and during this epidemic several "pock-marked" individuals were stricken with this disease, but without exception they laughed at the idea of this being Small-pox, saying they had had that once and nothing could make them believe that anything so trifling as this was Small-pox.

A person, such as some of our cases were, with several hundred pustules and vesicles, some umbilicated, some not, scattered over face, body and limbs, and very thick on face, would have no swelling of face, no fever, and one point which I think very important, no matter how thick nor how many the pustules, there was no odor in any case that I saw and in only one that I heard of.

The conclusions which I have drawn regarding this epidemic are

First: That there have been quite a number of cases of Genuine Variola in our city.

Second: That, as might have been expected from the amount of vaccinating done, there was more or less Impetigo Contagiosa.

Third: That there has existed in our city during the past year, some disease which resembles variola very closely, but which I do not believe to be variola nor have I been able to diagnose it as any disease with which I am familiar, nor a description of which can I find, or else the whole character of Variola has changed in the past few years to a very great extent.

Since the above was written there has appeared in the "Bulletin of the Virginia Board of Health" an article on Small-pox in which the author says, "Small-pox has existed in the State in a most unusual form, the mildness of the disease and its astonishingly low mortality have caused many to doubt the diagnosis and to mistake it for chicken-pox and impetigo, which has been excusable in many in-

stances. When it is recalled though that fatal cases have occurred in some localities, this should be sufficient ground to exclude the above named diseases."

He says that the appearance of the eruption "on the palms of the hands and soles of the feet among the other places named is extremely valuable corroborative evidence."

Farther on he says that "Absolutely no weight should be given to the absence of the secondary suppurative fever." To these points I cannot agree.

Several cases that I saw had very few pustules on the exposed parts of the body, and one case that I very well remember had on his chest a place at least 10 inches by 5 inches where I think it would have been impossible to have placed the point of a lead without touching a pustule.

THE DIFFERENTIAL DIAGNOSIS BETWEEN CHRONIC JOINT DISEASE AND TRAUMATIC NEUROSES.

By Reginald H. Sayre, M. D., of New York County.

Those who have had extensive experience with diseases of joints realize how difficult it is at times to decide from the first symptoms of inflammation whether or not a joint is involved; and that frequently several examinations of the patient may be necessary before arriving at an exact diagnosis. They know how frequently such cases are treated for rheumatism, growing pains and neuralgia for months before the deformity becomes so prominent as to show the true nature of the disease.

It is usually supposed, however, that after deformity and disability have taken place the picture is so marked as to make it impossible to fall into error.

My experience, on the contrary, leads me to differ from this view. I find that certain cases in which there is no joint inflammation present symptoms so nearly approaching those of arthritis that they have been treated by men of large experience as if the joints were involved. I believe these mistakes are usually caused by failure to get the complete history of the case in the first place, by too superficial examination, in the second, the patient's clothing hindering proper investigation, and third by lack of attention to minor symptoms.

Many cases of injury are followed by pains and disorders of the nervous system, and this not only where the injury has been caused by a railroad accident, or through the carelessness of some person who can be held responsible for the

damage, but when the patient alone is to blame and there is no question of legal redress. That a traumatic neuritis is set up in these cases there can be no doubt, and the variety of neurotic complications that may follow is most surprising. At times also there are neurotic disturbances, the result of misplacement of the viscera, which may be classed as traumatic neuroses, though the trauma is that of abnormal pressure on a nerve or an abnormal stretching of its fibres.

In many of these cases there is pain in the neighborhood of a joint, limitation of motion in the joint, and more or less marked deformity; the physician being called upon to determine the nature of the disturbance causing these symptoms. Has the patient Pott's disease? Has there been a fracture of the vertibræ, or is tuberculosis or malignant disease of the spine present? Is the difficulty simply a traumatic neuritis aggravated perhaps by inherited tendencies, a rheumatic diathesis or a nervous exhaustion? Is the atrophy, disability and distortion the result of Hip Disease? Does a patient require rest and protection, or should vigorous exercise be prescribed?

These questions are difficult of answer, and in many instances can only be answered correctly by the most careful and thorough examination of the patient's previous and present condition, taking into account the history and noting on more than one occasion the attitude of the patient, the location of the pain, the presence or absence of muscular spasm, the range of temperature for several days and at different times in the day, the presence of motor or sensory disturbances in other parts of the body, and finally by noting carefully the patient's mental condition. A distinguishing point between a nerve inflammation and an inflamed joint is the rapidity with which symptoms of an injury to a nerve follow the trauma which produced it, while it may be months after the injury that manifestations of joint inflammation attract attention. While atrophy is a prom-

inent and constant symptom in chronic inflammation of a joint, and makes its appearance usually before pain is at all pronounced, yet it does not follow the onset of a marked traumatism as speedily as in the case of injury to a nerve.

Another important factor in discrimination between traumatic neurosis and chronic inflammation, is the subnormal temperature usually present in the former, just as it is in various diseases accompanied by marked depression of the vital forces. There seems to be a lowering in tone throughout the entire system with a corresponding decrease in the body heat. In chronic inflammation of a joint, however, there is usually a slight increase in temperature, say to 90° F. and one of the best guides to the activity of the destructive process going on in the bone is found in the reading of the thermometer. The local temperature also is apt to be much depressed after an injury to the nerve supplying this part and at times an extremity or a part of an extremity will show a lowering in the surface temperature of one or two degrees below that of its fellow, or of other parts of the body. On the contrary, if an inflamed joint be at all near the surface, the increase in its temperature may usually be detected by the touch, should a surface thermometer not be at hand. I would draw attention here to the fact that we may have a lowering of surface temperature in an extremity which has been kept at rest for a long time, either in bed or in a splint, while a joint in this extremity, as the knee or ankle, for instance, shows a marked increase of heat, and this must be kept in mind in making a diagnosis.

One of the first, probably the very first, symptom of an inflamed joint is involuntary spasm of the muscles controlling it, and as the disease goes on this spasm becomes more and more pronounced. A peculiarity of this spasm is that passive motion within a certain limited range may often be made with entire absence of pain or resistance, while efforts at voluntary motion on the part of a patient, or motion

greater in extent than that which the severity of the inflammation permits at once excites muscular spasm and gives the appearance of complete ankylosis. Nature does not oppose motion of a joint so long as that motion fails to inflict injury, but as soon as it causes irritation the muscles spring into action to resist it. If an anaesthetic is given in such cases the physician is deprived of a symptom of vital importance to a perfect diagnosis.

In many so-called "hysterical joints" and in these neurotic cases of which I speak, there may be a simulation of ankylosis and of muscular spasm, but by engaging the attention of the patient in other things and noticing the position of the joints meanwhile, motions will often be observed in joints supposed to be ankylosed. At times the patient may be induced to move the joint by placing the body in a different position from that in which the movement has usually been attempted and then attempting to secure motion of some other joint the movement of which will act on the joint under examination, the patient meanwhile having the attention concentrated on efforts to move the other joint about which there is no question.

In cases of joint injury the location of the pain is to be borne in mind, and it may be a help toward excluding joint disease if the patient locates the pain in different places at different times, and locates the pain at points other than those where the nerves supplying the affected joint should come to the surface. In spinal cases a tenderness along the whole length of the spinal column is almost proof in itself that the case is neurotic and not ostitic, the pain of bone inflammation being almost always confined to the distal extremities of the spinal nerves, or if in the back, only in a limited area. Should the patient be awakened at night, especially just as he is dosing off, by sharp pains that cause a loud sudden cry, bone inflammation is almost certainly present. The general appearance of the patient

will often aid greatly in eliminating bone inflammation. The expression of certain neurotics can hardly be described, but once recognized the picture is as typical as that of melancholia or mania.

In some neurotic cases there will be found a peculiar oedema of an extremity which, being associated with great tenderness, may suggest a bone abscess, but the observer will find that the pain is not so localized as in a bone abscess, and extends frequently along the course of some nerve; it may at times be accompanied by nodosities of the nerve, changes in the color of the skin, purple or blue spots which may be elevated and at times by patches which are very painful.

The histories of several cases that have come under my observation show how difficult it is at times to make a differential diagnosis, and I will therefore briefly review a few of them:

Case I.—Last summer a girl of about twenty years of age was referred to me by a colleague at Bellevue Hospital, for diagnosis and treatment. She was supposed to be suffering from hip joint disease, and on admission was wearing a long traction splint. Her right thigh was flexed at about 45° and adducted so that it crossed the left, about half way between the hip and knee, and was said to be ankylosed. The patient had been confined to bed for months. The question was whether or not an excision would be necessary to enable her to walk. On questioning the girl, I noticed a curious expression which is often found in neurotic individuals, as well as a peculiar hesitancy and deliberate speech which made me suspect something besides an inflamed joint. I noticed that when indicating the site of pain she moved the affected limb under the bed clothes, which I had purposely refrained from removing. On examining the limbs the right hip joint was apparently firmly ankylosed in the position of flexion and adduction I have

described, but as I examined it I managed to tickle her and found that there was a sudden movement in the hip joint unaccompanied by pain. The right knee was bent and the hamstrings much contracted. The right ankle was in a position of equinus so marked that the dorsum of the foot was almost in a line with the shin. The foot was cold and no motion of the toes or foot could be provoked by tickling or pricking. Examination showed the head of the femur to be in the acetabulum, and the trochanter in its proper relation to Nelaton's line. The patient complained of intense pain on efforts being made to move the hip joint, but her face and the accent of her voice caused me to think there was but little real discomfort. She also complained of pain over the bladder and lower abdominal region generally on palpation. The trunk seemed so curiously twisted as she lay in bed that I suspended her by the arms in a suspension swing, allowing part of her weight to rest on the sound foot, when I discovered a marked rotary lateral curvature of the spine, the patient complaining bitterly of any efforts to correct the latter, but always in a tone that to my mind precluded the possibility of her suffering real pain from the manipulations. I found that two years previous she had jumped from a second story window and fallen between a wall and a house in a narrow space, and been violently bruised about the buttocks. For several days she kept at work till the pain obliged her to go to bed. She was then sent to a hospital where a diagnosis of hip disease was made and a hip splint applied, which she wore for about a year. Later on she was admitted to Bellevue with the right thigh flexed and adducted, and was put to bed for several months with weight and pulley attached to her leg, without any improvement of position or relief of the pains. Her temperature had not been elevated.

My diagnosis was a traumatic neuritis of the sciatic nerve, with subsequent deformity of the hip, knee, ankle

and trunk, probably from old synovitis, accompanied by contraction of many muscles and by fibrous adhesions in the joints. Under ether the adductor tendons were slowly stretched and the adhesions of the capsule of the hip joint broken up. The knee was also straightened by stretching. The tendon Achillis was divided subcutaneously and the foot put at a right angle with the leg. The patient's entire right lower extremity and trunk were then enveloped in plaster bandages, the right thigh being in a position of extreme adduction. For two or three days the patient complained bitterly, but after that was perfectly easy. In two weeks she could move the toes, and on being removed from the plaster of Paris cast six weeks after operation, could move the foot a trifle. Faradism was daily applied to the entire limb, together with gentle frictions and passive motions, and after a week the patient was encouraged to make active motions of her joints, under supervision. On noting a tendency for the adduction of the hip to recur, I placed her legs in the position of extreme adduction and told her that unless she kept them in this position all the time, I would be obliged to reapply the plaster. After this there was no tendency towards adduction. As soon as the muscles of the legs were a little stronger the patient was compelled to walk with crutches, and in less than a month could go all over the hospital without crutch or cane, having full motion of all her joints and good position of her trunk. At one time during her convalescence I was absent for ten days, and found on my return that the patient who was just beginning to walk, had assumed many of her old attitudes since being free from strict control. I spoke very sharply to her and found at my next visit that she had improved materially, and after that made steady progress until she left the hospital.

Case II. In 1897 a woman of about 30 years of age was put under my care at Bellevue by a colleague. She was em-

ployed in a factory where she ran a machine which required her to stamp violently with her left foot whenever the treadle was pushed and to this she attributed her trouble. Two years before she began having pain in the left knee and shortly afterwards a dark purple spot made its appearance on the inner aspect of the joint where the pain had been. She said this spot had swollen, grown darker in color and finally the skin had pealed off leaving a raw surface that had been slow to heal. She had visited one of the hospitals of the city and her knee had there been opened, but nothing being found the joint had been closed. The pain not diminishing after the operation, but extending along the upper part of the tibia and being accompanied by some oedema she was told that in all probability she had an abcess in the bone and an exploratory trephining of the tibia was advised. Refusing this, she was discharged from the hospital, but being unable to work, she applied for admission to Bellevue. She had visited an X-ray Studio in the meanwhile and had two skiagraphs taken of the knee. These she showed to me when I first saw her, but they failed to disclose anything abnormal in the bones of either thigh or leg.

When I first saw her she had been in bed for some months. The left lower extremity was somewhat shrunken and flabby and colder than its fellow, except at a spot one inch by three on the inner side of the knee, which was raised (perhaps an eighth of an inch) and purple in color. The slightest pressure on this spot seemed to give great pain which radiated up and down the limb along the course of the Saphenous vein. The outlines of the knee joint were fairly normal, but any movement was said to be attended by great pain. The skin over the tibia was oedematous and pressure gave pain. As in the preceding case, however, the patient's voice did not indicate actual pain. The temperature during her stay in the hospital had varied, now and then running up to 102 with a rapid pulse, and again being subnormal.

The purple spots appeared, she stated, after the pain had been very intense for several days and after lasting some weeks would disappear leaving no traces. Sometimes they appeared at the time of menstruation and the pain in the leg was always aggravated at this time. Menstruation was regular, but very scanty and accompanied by great pain before the flow began, this pain being in the pelvis and reaching around towards the buttock, whence it ran down the inner and posterior aspect of the thigh. There was also marked tenderness along the spine and between the shoulders aggravated by using her arms. The extremities were cyanotic, cold and damp. Pulse rapid and feeble.

These symptoms seemed to me so at variance with chronic inflammation of the knee that I concluded the pain was reflex in its character and due to irritation of her pelvic nerves, probably in consequence of her occupation, added to natural inability to resist fatigue. Vaginal examination showed a very small uterus with a pin hole cervix. This was stretched and the uterus faradized with the result that menstruation became much more profuse and not attended by cramps and pain. The leg was wrapped in thick cotton and bandaged loosely, as tight bandaging caused a feeling as if the limb would burst. Motion in the knee was prevented by a splint and the patient put on crutches. Digitalis and nux vomica were given in compound tincture mixture of Cinchona. After two months the condition had improved so that pressure could be made on the foot without causing pain and the patient was gradually allowed to put her weight on her foot. The splint was removed daily and faradism and massage gently applied. At times the patient overexerted herself in various ways and each time part of the old disability would reassert itself, but in the course of three months the splint was laid aside; then the crutches and little by little free motion returned to the knee. The patient can now walk four miles, but if she becomes

overtaxed either physically or mentally the oedema and pain in the entire extremity recur to some extent.

Case III.—In June, 1888, Miss D., aged 26, consulted me for supposed disease in the spine. She was a tall, fairly well nourished girl, and gave a history of having fallen twelve years before, pain and inability to walk gradually increasing since that time. At the time she first consulted me her spine was markedly curved, but not with the usual sharp projection of spinal caries. She walked with great difficulty, complained of pain on the slightest jar, was unable to step without great pain, could not lie down or arise without aid, and when lying down was unable to turn over without assistance on account of pain. On rising from a chair she was obliged to put her hands on her knees to aid her. The left lower extremity was much smaller than the right, and its sensation diminished. At the time of visiting me she was wearing a plaster jacket. After careful examination I concluded that, although there was marked pain around the abdomen, pains down the legs, very great sensitiveness on the slightest movement, and marked rigidity of the spinal muscles, her symptoms were more attributable to a uterine disturbance than to ostitis of the vertebræ, and requested vaginal examination. I found the uterus markedly retro-flexed and firmly bound down, and told her that when her uterus was replaced and held in its normal position, her symptoms would subside, and that I did not believe there was any disease of the vertebræ. It was not until some time after this that I learned from the patient her history, which she was very unwilling to give me at the beginning of the examination. About the age of fourteen she had a fall, striking her right hip on the curbstone. She did not feel any effects for a few days, but afterward began to have pain on certain movements of the limb and body, when it seemed to "catch her," as she expressed it, and caused her intense pain. Several physicians

examined her thinking that she had displaced the joint, but found that it was sound. After about a year her feet began to swell, and the soles, particularly the heels, became sore, swollen and painful. Then the left hip became affected as the right one had been, and she was said to have sciatica, and for a number of years was obliged to use hypodermic injections of morphine. The pain was worse while lying down, and often after going to bed she would be obliged to get up, and stand in a certain position for hours.

Five years before the patient consulted me, her back began to ache. Three months after the onset of this symptom she went to Philadelphia where a prominent physician, pronounced her trouble disease of the spine and ordered a leather jacket. Up to this time she had always been able to go about, and even walked quite well, but after the application of the jacket she became, as she describes it, "helpless," her arms becoming so weak that she could hardly lift them. Her physician then removed the jacket and advised her to remain in bed until the spine consolidated. This advice she did not follow, because she suffered so much pain while lying down. She then visited New York, where her trouble was called Pott's disease, another gentleman in consultation agreeing with the diagnosis, a support was advised to prevent her becoming humpbacked. He first applied a brace of his own, and finding this gave no relief, applied a Taylor brace. The latter failing to give comfort, he tried a plaster jacket, which she was enabled to "endure" for some three years. About this time the left lower extremity began to diminish in size. This history I did not learn from the patient until a number of months after first seeing her. Having discovered the retroflection of the uterus, I endeavored to replace the uterus and hold it in position by boro glyceride tampons. I then advised the patient to consult the late Dr. Lusk as to the advisability of performing "Alexander's operation"

of shortening the round ligaments. This operation was performed by Dr. Lusk and held the uterus in a very satisfactory position. The old pain in the back and legs began to diminish immediately after the operation, but the patient was restless and insisted upon going around too soon, and part of the old pain returned. As this pain persisted to some degree after the application of a suitable pessary, I attributed it to neuralgia of the sacral plexus and applied intra-pelvic galvanism with relief. I also directed the patient to take regular and systematic gymnastic exercise and massage to straighten her curved spine and relax the contracted muscles of the entire anterior part of her trunk. She speedily became more upright in carriage and has had steady diminution of her aches and pains. She writes me under date of December 20, 1890:

"Since my operation I have never once felt the slightest return of those attacks in my hip I suffered with so long. I am quite straight and can keep myself up better. My health is excellent, and it would be impossible for me to tell you how well I am. I have neither ache or pain. All troubles have vanished entirely. My muscular strength is much improved also."

The fact that all these cases presented symptoms so like those commonly associated with chronic disease of the spine, the hip and knee as to have caused various surgeons of experience to consider the bones involved, shows that the diagnosis was by no means clear, and I have gone somewhat into detail in the recital of these histories, as it seemed to me that they were worth careful study.

From these and numerous other cases that have come under my observation I would say that in making a differential diagnosis between chronic joint disease and a traumatic neurosis, the following points were chiefly to be noted:

(a) A neurosis is apt to follow injury sooner than is disease of a joint. (b) The temperature is usually subnormal in a

neurosis and elevated in inflammation of a joint. (c) The local temperature is usually much lower in case of a neurosis than in disease of a joint. (d) Atrophy progresses more rapidly after injury to a nerve. (e) True muscular spasm is not present except in joint disease. It may be simulated, however. (f) True night cries are pathognomonic of joint disease. (g) The appearance of the patient, if indicating a disordered nervous system, may aid in the diagnosis.

DISCUSSION.

Dr. Robert Newman, of New York county, asked if increase of joint pain at night could be considered a symptom of importance in joint disease.

Dr. Sayre replied that night cries, just as the patient was about dropping off asleep, were almost pathognomonic of bone involvement.

SUBNORMAL TEMPERATURE.

LeRoy J. Brooks, of Chenango County.

The paper of 1898, on the same subject, presented the following conclusions:

1. Subnormal temperature is not as infrequent as we have been led by writers to suppose.

2. Subnormal temperature is a frequent prodrome of disease and furnishes important indications toward abortive treatment.

3. A continued subnormal temperature, whether cause or effect, is disastrous to the system and especially to the nervous centers.

4. The subnormal temperature in a disease usually characterized by an elevated temperature is a very grave symptom.

5. The causes producing subnormal temperature can probably be covered by the following pathological conditions:

(a) A primary disease or injury to the nerves or nerve centers.

(b) A toxaemia or autoxaemia.

(c) A functional unbalance between thermogenesis and thermotaxis.

(d) A disproportion between the size or power of the heart and blood distribution.

(e) Heat abstraction.

(f) A sudden and extreme drain from body of blood or serum.

I presented a series of cases, attempting to demonstrate that in some forms of insanity a subnormal temperature preceded the mental aberration weeks and perhaps months,

and if this condition was early recognized the mental disease could be averted. That a depressed temperature preceded the outbreak in periodical drinkers, which also, if averted, by strychina, etc., prevented the outbreak. That the same conditions often preceded epileptic attacks and acute neurasthenia, particularly in overworked business men. It has been long recognized that a subnormal temperature was a frequent part of the history of certain types of melancholia. Wunderlich, Allbul, Williams, and many more recent observers have recorded numerous cases when the disease has been constantly characterized by temperature ranging from 95 to 97.5; a fact indeed recognized by most authors.

In a case related in the paper of last year, of recurring or relapsing melancholia, the temperature depression invariably preceded by weeks the actual manifestations, accompanied, as the disease advanced, by various vaso-motor (generally intestinal or cardiac) disturbances. It is difficult to determine, in melancholia, just when the disease begins, the patients so often concealing their condition, until it is forced by its intensity to reveal itself.

Since the previous paper, one case only has presented itself for personal observation. In this instance, the wife of the patient was a chronic melancholic. The husband, a hard-working mechanic, of above average intelligence, gave a history of an attack of melancholia thirty years ago which required asylum treatment; since that time had been well, bright and active. In 1897 he had an attack of acute pleuritis, which debilitated him for a few months. In June, 1899, he began complaining of cold hands and feet, and generally cold sensations, although well nourished and eating well, without sign of cardiac or renal disease. I found his average temperature 97.5. He did not consent to treatment, regarding the condition as unworthy of attention. In August he began worrying about his work, and imagining that

he was not doing his full duty to his employers; he soon added to this an idea of impending poverty, and unreasonable suspicions; these symptoms grew more and more aggravated, until, in the early part of October, he attempted suicide by cutting his throat. The lack of confidence in physicians, and the fear of cost, prevented treatment to any great extent; but I cannot evade the conviction that if he had been placed in a well managed sanitarium, the more serious developments would have been averted.

Dr. Wm. Neftel, in June, 1898, presented an interesting and valuable paper on remitting melancholia, detailing several cases closely resembling the above; characterized by temperature depressions and vaso-motor disturbances, in which early treatment was valuable and effective. He attributes the recurrence to an inherited psycho-neuropathic disposition, and calls special attention to the profound early changes, both psychical and somatic, in which circulation, respiration, sleep, appetite, digestion, temperature, muscular and mental activity, the secretions and excretions, are diminished. Dr. R. C. Loveland, January, 1898, calls attention to the early blood changes in melancholia, and to the concentration of the urine and other secretions, in which depressed temperature is more frequently manifest than otherwise as a sequence.

In March, 1899, I examined a lady who had been under the observation of another physician for ten years, and whose temperature, except in acute febrile attacks, had never exceeded 97.5, and was frequently at 96 (under the tongue). Attention was first called to it after a prolonged nervous tax incidental to the care of her family, several of whom had scarlatina. The diagnosis had been "tired heart." Originally active and vigorous, but she had now constant sense of weariness, and was compelled to rest a part of each day, and at times had been confined to bed several days, in order to regain her physical balance. With the weariness had

come gradually increasing irritability, nervousness and worry, and an increasing mental depression. Exam. March 10th, 1899. Somewhat anaemic, but in good flesh, weighing 155 pounds. No oedema. Surface cool. Menstruation normal. No pelvic disease. Had three children. Lungs normal. Abdominal organs normal. Heart, size at least not increased, and perhaps small. Impulse slight. Action irregular but not intermitting. Pulse 90; small and weak, easily quickened. Urine pale; specific gravity 1030, containing neither urates, casts, albumen or sugar. Solids for 24 hours exceeded the normal. The subnormal temperature in this case seemed to me to be due to the muscularly weak heart, but was gradually leading to an inevitable melancholia.

Numerous cases are reported showing that a subnormal temperature often precedes an attack of epilepsy. Jannsen refers to the subnormal temperature occurring before an attack of apoplexy or embolism, and it is often so during the early part of an attack, as in a case reported by Bastian, at 95°. In grave cases, the temperature may remain low. Temperature observation is an aid to diagnosis. In true apoplexy, especially when it depends on cerebral hemorrhage, the temperature constantly diminishes some moments after the attack, and afterward remains, twenty-four hours at least, below the normal standard, even when intense and reiterated fits occur. In congestive attacks, on the contrary, the temperature rises at the beginning and continues to rise during the continuance of the attack.

It has long been a question with me whether the tissue changes of the so-called pre-tubercular stage might not be indicated by a subnormal temperature, or whether such a condition, prolonged, would result, in the susceptible, in tuberculosis. One of the cases reported in the paper of 1898 as a continued subnormal temperature (97°) without any discoverable lesion to account for it, developed, early in 1899,

tuberculosis, which has since been progressive and characteristic. Observation in those exposed to or inheriting the disease might find this symptom of importance in establishing early treatment.

The relations of auto-toxaemia to temperature have been studied by different observers during the year, as well as the toxaemic causes of diseases, especially of the nervous centers. Dana presented a paper on subacute sclerosis of the cord and its relationship to the auto-toxaemia; Neftel and Lovelend on melancholia and auto-toxaemia and other papers on the same subject.

It would seem that the diseases produced by ptomaines are as a rule characterized by temperature elevations. The only intestinal condition in which the temperature becomes markedly subnormal is intestinal obstruction and cholera, both of which involve elements of shock and nerve injury, aside from toxaemic influences. Those in which the causes can be attributed to toxaemia from leucomains, however, very often show marked temperature depression. This is true in myxoedema, acute yellow atrophy of the liver, the chronic organic changes in the liver, such as sclerosis, waxy degeneration, and cancer until septic influences become active—in exophthalmic goitre, pernicious anaemia and leucocythemia, in the degenerations of urea into ammoniaemia, in diabetes, acetonuria, in cancer of the stomach and intestines; in melancholia, in which tissue change and toxaemia is a recognized factor, in stages of spinal sclerosis, and other organic diseases of the spinal cord and brain, which, according to Dana, have their origin in an auto-toxaemia.

Leucomains may be either poisonous or inert. The poisonous ones may be classed: Paraxanthin, methylxanthin, heteroxanthin, xanthin creatinin and gerontin. Heteroxanthin and paraxanthin produce rigor mortis, dyspnoea and convulsions. Xantho-creatinin produces depression, somno-

lence, fatigue and vomiting. Gerontin produces paralyzing influences on the nerve centres and ganglia of the heart. All produce intense depression of nerve centers, sluggish functions, depressed temperatures, and lowered vitality. Although much study has been devoted to this subject, by Vaugh, Chittendon, Horton in this county, Wirk, Gunter, Jaesch, Recklinghausen, Schmidt, Seyler and Kürlin abroad, there is yet an unlimited field for investigation, which may explain many of the now unknown processes and diseases of the body.

These toxins are manufactured in the body as the result of normal or abnormal chemic activity, and are stored up as the result of some interference, total or partial, with organs that produce substances essential to health, such as the thyroid, the congenital absence of which produces cretinism, its extirpation, or abolition of function, myxoedema, its unbalance of function and morbid growth of exophthalmic goitre; the pituitary body and others.

The same intoxication occurs, when matters which should be eliminated are retained producing conditions characterized by at least irregular occurrence of depressed temperature such as forms of rheumatism and gout, or when a large surface has been seared. The latter has been particularly marked; temperatures after severe burns having been reported as low as 90-94. Forms of skin disease preventing the normal action of the skin show temperature depressions. The rapid development of toxins in which the system has been overwhelmed, such as the malignant forms of diphtheria, the infectious pneumonias, the fulminating forms of epidemic, cerebro-spinal meningitis, and forms of tubercular meningitis, possess the same temperature characteristics.

Dr. John Hay, of Asheville, reports a case remarkable for long-continued low temperature which he diagnoses as tubercular meningitis. Child six months old. Commencing with symptoms of cerebral irritation; on the 15th of August

temperature was of 104.2°, which continued with some variations until the 20th. It then dropped to 90° (rectum); 21st, 92°, with respirations of 12; 22d, 92°; 23d, 89°, dropping to 88°; 24th, 87°, which continued until the 28th; 29th, 90°, continuing until the 31st, when it reached 94°, when death occurred. Here was a history of temperature of eleven days with the record below 90° and most of the time from 87° to 88°, this being as low as his thermometer could register. Breschell and Becquerel point out remarkable temperature depressions in animals whose bodies have been covered with glue and resin, the temperature dropping 25.20° F. to 32.4° of their temperature. Alcohol, both in chronic drinkers and in acute alcoholic intoxication, produces remarkably lowered temperatures at times. A case of acute alcoholic poisoning is reported in the London Hospital reports with a temperature of 90° F.

Dumeril and Demarquay, in an elaborate study, show that the same drug, in poisonous doses, not only lowers the normal temperature, but lessens the temperature in diseases ordinarily febrile. The same result may be is attributed to many other drugs, such as opium, hyoscyamus camphor, acetic acid, hydrocyanic acid, nitric acid, belladonna, tobacco, sulphur, hydrochloric acid, chloral, carbolic acid and the coal tar products. The British Medical Journal relates a case of chloral poisoning with a temperature of 94°. Local subnormal temperatures present an interesting study. Thirty years ago, Dr. Alonzo Clark presented a large number of cases of nerve injury resulting in neuritis and secondary nerve degeneration, extending to the nerve centers, resulting in permanent loss of function, and a permanent lowering of the temperature of the part from ½ to 2 or even 3 degrees. I reported three similar cases in 1890, and many are on record. The influences of the sympathetic system on the surface temperature is also an interesting study. Partial ischaemia of a more or less intense character is a prom-

inent result of irritation of the vaso-motor nerves. It may even be carried so far that not even a drop of blood flows upon pricking the skin. The parts grow cold and pale; the vital activity decreases, and the excitability of the nerves and muscles becomes sub-normal (Charcot). Weber says that in experiments on animals, he has kept up irritation of the cervical sympathetic for a week at a time, resulting in a thermal decrease of 2° F. It is not rare to find in certain cases of angioneurosis, for example, in hysterical subjects, intense and persistent ischaemia with a marked lowering of the temperature (Charcot), and a prolonged vaso-motor paralysis by the over-distension of the vessels and sluggish circulation will produce a like condition. A vaso-motor instability, as in neurasthenia and melancholia, with irregular functional action of the internal organs, and a coincident or consequent auto-intoxication, may be assigned as the cause of continued subnormal temperature.

Dudley Fallen (Amer. Jour. Med. Sciences, March, 1897) made a series of investigations of the effects of anaesthesia upon temperature and blood pressure. He found that animals lose heat in a marked degree after prolonged anaesthesia (aether): with chloroform or the A. C. E. mixture, the temperature continues to fall for some time after the administration. Loss of blood pressure corresponds closely with the loss of heat. The administration of an enema of alcohol tends to bring back the blood pressure, but renders the return of normal temperature slower. He concludes that covering carefully and protection by hot bottles prevent the loss of blood pressure and the consequent loss of heat; and a further practical fact should be quoted: that a room with temperature in excess of 93-96° increases the surface temperature even above normal, but diminishes the blood pressure, and is a danger to the patient undergoing a prolonged operation. DaCosta, Keen, and others report

cases where it was believed that the fatal result—thermic fever—was from this cause.

Muhlman (Archives für Kinderheilkunde) reports a series of observations on the temperature of the new-born. He found the average temperature of 21 children to be 97.3°; he found it occasionally 94.1. I have not been able to confirm this, for in a series of ten children, the temperature averaged 98.4°. Muhlman states that the surrounding atmosphere varied the bodily (infant) temperature, but that it was not influenced by activity or functional action—daylight, or sunlight, these conditions being more apt to lower it than otherwise.

DISCUSSION.

Dr. E. D. Fisher, of New York county, said that the paper had opened to his mind a new field of investigation, but he would not discuss at the present time the effect of certain poisons, or even of anaesthetics on the system. He desired to relate his experience in regard to temperature changes observed in persons affected with mental or nervous disease. It was almost an axiom among physicians in insane asylums, and among neurologists generally, that there are very few, if any, temperature changes. As a rule, insanity runs a non-febrile course. An exception was to be found in the case of acute mania, and this was explained by the pathological changes found post-mortem—the meningitis and the cerebritis. With regard to the lowering of the temperature there were very slight changes within physiological limits in any class of the insane. In melancholia, stuporous insanity or dementia—diseases showing little or no activity on the part of the individual—there would be found a slightly subnormal temperature. Whenever an insane person presented a high temperature we should look for an outside cause such as tuberculosis or some similar disease, so easily overlooked in the insane. In normal man there was a certain rise of temperature as a result of muscular exertion, and there was good authority for the statement that these changes were dependent upon muscular contraction. Krieger had found that in individuals working at night the temperature curves were just the reverse of those observed in others. Study of temperature among the insane, according to his experience, furnished very little information as to the onset or recurrence of an attack. It might possibly be one of many signs and symptoms. The temperature changes in epileptics would not tell the physician as to time of an epileptic seizure.

In an ordinary epileptic attack there was rarely a perceptible rise of temperature; elevations of temperature were observed chiefly in those cases in which convulsions succeeded one another rapidly and gave rise to the condition known as *status epilepticus.* Change of temperature of the body did not seem to be an important factor in either nervous or mental diseases and could be explained by intercurrent maladies or by too little or too great muscular activity.

Dr. Henry Risch, of Brooklyn, said that in order to keep up an activity necessary to overcome certain germs in the system the temperature must be elevated above the normal.

Dr. Brooks said that usually a long time elapsed before persons afflicted with melancholia reached institutions. In talking with an asylum physician, Dr. Palmer, the latter had informed him that he knew of no observations having been made previously regarding the early temperature changes in this class of cases.

ETIOLOGICAL RELATION OF AUTO-INTOXICATION AND AUTO-INFECTION TO DISEASES OF THE EYE.

By Alvin A. Hubbell, M. D., of Erie County, New York.

Auto-intoxication has long been recognized in the history and etiology of disease, but under other names, and in a somewhat restricted sense. Netter, in 1884, was the first to use the term, but in a sense somewhat technical and narrow. It was the eminent French physician, Bouchard, who gave the term its present signification by broadening its scope so as to include poisoning, not only from materials normally present in the tissues but from toxic products due to bacterial activity or tissue metabolism.

Auto-intoxication, then, is self-poisoning, whether by the excess or retention of normal products, or by abnormal products generated within the body. The term should be used in a different sense than that of auto-infection which implies a direct germ invasion and activity, and is not of so common occurrence. It is possible that a septicæmia may come from infection started within the body, or that, under extraordinary circumstances, the bacterium coli, so universally present in the intestines, and perhaps normally so, may infect and lead to inflammatory processes near its habitat or even in remote parts of the body. I think I have seen a case of this kind in a man about seventy years of age on whom I operated for cataract several years ago. I had performed a small iridectomy preliminary to the extraction, which was made about four weeks afterwards. Recovery from both operations was rapid and complete. The patient had for years been subject to an obstinate constipation, and being

rather careless in his habits and toilet, he would often resort to mechanical measures for securing relief, and the instrument nearest at hand and most convenient for him was his finger. Before operating, as is always my custom, I took the precaution to free his bowels, for by so doing much infectious and toxic material is eliminated and there is, therefore, less danger of inflammatory reaction. This patient was dismissed from the hospital two weeks after the cataract operation, cured. A few weeks later he was fitted to a glass with vision in the operated eye equal to 5-6, nearly normal, and went home. In about three months he returned, suffering from a severe iritis with hypopyon. On inquiry, I found that he was chronically constipated, and had unduly exposed himself to cold; and it has always been my belief that, through exposure and the non-resisting condition of the parts which this and the operation had brought about, infection took place. This infection was undoubtedly from within, as there was no corneal ulceration or other external communication, and the inflammation was of the iris and ciliary body. I have not been able to rid myself of the idea that this infection also came from the colon bacilli which must have been super-abundant in the intestines, and possibly present in other parts of the body, even in the tissues of the eye. I may add that after evacuating the pus by means of a corneal incision, the patient recovered with vision of 5-12. A few other experiences have led me to attribute the unusual reactions, presented, to auto-infection, or perhaps to endo-infection, which I believe to be a term more fully covering the conditions. Infective endo-carditis, otitis media in cases of pneumonia or influenza, tubercular arthritis, metastatic orchitis in mumps, etc., are pointed examples of endo-infection.

Auto-and endo-infection are, therefore, not uncommon; but in disease generally, they are infrequent as compared with

auto-intoxication. The latter is a wide-spread condition, and may not only accompany the infectious processes, as in typhoid fever, diphtheria, etc., but may originate independently through the development of toxic agencies in the digestive tract and other cavities, and the metabolism of the tissues of the body. The contents of the gastro-intestinal canal are nutrient-culture media for myriads of bacteria, and the products of their activity are supposed to be very numerous, this activity varying according to the character of the ingesta, the gastro-intestinal secretions, and the peristaltic movements. These products may be gases, acids and their compounds, various compound alkaloids (indol, phenol, skatol, cresol, tyrosin), and numerous ferments, enzymes, ptomaines, and toxalbumins. These may be taken up into the circulation and carried to all parts of the body, and veritable poisonings are the result. Undoubtedly, bacterial action upon the contents of other cavities oftentimes develops toxic products which may also gain access to the circulation and cause abnormal conditions.

Of no less importance in the production of auto-intoxication are the normal and abnormal products of tissue-metabolism. Excess of the former, as in over-secretion, diminished excretion or lack of chemical metamorphosis, as illustrated in thyroid disease, in nephritis, and in cirrhosis of the liver, and the presence of the latter, as in glycosuria and other diseases, become equally deleterious. It is impossible for me to enter into a detailed consideration of the origin and nature of the numerous toxic agencies whose influence are so potent in the development and perpetuation of disease, both of mind and body. Reference must be made to the researches begun by Bouchard and first published by him in 1886 (Union Médicale), and continued and extended by many others, both in this country and abroad.

While there is still very much to be desired in regard to determining the exact source and nature of germ-processes,

and germ and metabolic products, yet sufficient is known to make their existence and potency undoubted. The recognition of infectious agencies operating both from without and within, and of toxic products both from bacterial processes and metabolic changes, is radically changing the whole aspect of etiology and pathology, and must also bear fruit in the medical therapeutics of the future, as it has already done in the surgical therapeutics of the last two decades.

In diseases of the eye, auto-intoxication and auto- or endo-infection have most important bearings upon etiology and treatment. Here, as elsewhere in the body, we must recognize two factors in disease. First, that unknown, but real, something which we call vitality, or vital power, or cell-activity, of the parts, the loss of which means atrophy or death, the excess of which means hyperplasia, and the perversion of which means degeneration or neo-plasmic growth; second, a *materies morbi*, either chemical or living, in the presence of which cell-life ceases, becomes perverted, or is super-abundant. Cell-integrity, cell-vigor, vital strength, is the greatest security to health. Whatever impairs this, weakens the "defenses," and morbific agencies, otherwise inert, obtain a foot-hold. This cell-vigor depends upon conditions of inheritance and of cell-nutrition. The former are transmitted from parent to child, and the latter are acquired by a multitude of circumstances of nerve-reactions, supply of food and oxygen, free excretion, muscular activities and rest. In the former there is "robustness" of tissue and absence of disease. In the latter there are dyscrasias and an ever-present "morbid opportunity," in which morbific influences are not repelled and disease follows.

Thus the eye with the body generally, may possess an inherent "vital strength" which defies even extraordinary morbific agencies; or, on the other hand, it may scarcely have vital resources sufficient to resist the slightest extrane-

ous influence. In considering diseases of the eye, then, etiologically or therapeutically, this question of "tissue-robustness" or vital resistance, determined mainly by studying that of other parts of the body, is of greatest importance; for in no other way can we understand why the eyes of one person readily yield to endo-infection or to endogenetically derived poisons, while in those of another no effect whatever is apparent.

Among the diseases of the eye which can be clearly recognized as due to auto- or endo-infection, being at first, perhaps, an exo-infection, are those due to syphilis, both acquired and congenital. What the infective material of syphilis is has not yet been determined, but there is no reason to doubt its bacterial character. Whether secondary and tertiary manifestations of syphilis are directly due to the same germ as the primary ones, or whether they arise from some peculiar toxins derived from the activities of the supposed bacterial germs, cannot yet be determined. But whatever be the germ, the eye, under suitable conditions of vital non-resistance, becomes a favorite soil for its operations. Affections of the eye are seen in the secondary stages of syphilis in the form of acute inflammations, especially of the iris, ciliary body and choroid, and sometimes, but usually later, of the retina, cornea and sclera. In the tertiary stages there are chronic inflammations of the choroid, retina, and other tissues of the ball, and gummatous infiltrations of the iris and other structures, and also atrophies and paralyses of the optic and motor nerves, found in connection with cerebral and spinal scleroses. In inherited syphilis, it is not possible that syphilitic germs, if they exist, can be transmitted from parent to offspring; but a lowered tissue-vitality is transmitted, and the eye-tissues are easily affected by toxins and infections, whereby interstitial keratitis, and chronic inflammations of the inner structures of the eye frequently develop.

Tuberculosis is another endo-infectious disease of the eye, and may attack any part; but it is seen most frequently in the choroid. The agent of infection is well known, and the process well illustrates what may happen, in a modified form, in other endo-infections of the eye, such as those arising from influenza, leprosy, variola, measles, etc. Septic endo-infection of the eye may occur in pyemia, the septic fevers, etc., causing purulent inflammations, and even panophthalmitis. Many other illustrations of undoubted ocular endo-infection might be cited, but the above are sufficient for the present purpose.

Let us now, for a moment, turn our attention to some of the auto-intoxications, or those diseases in which there is evident poisoning by reason of the excess of some normal tissue-product, or the presence of some abnormal substance generated somewhere within the body. Uricacidemia is perhaps a pertinent illustration of an excess of a normal product. The accumulation of uric acid in the blood in abnormal quantity is believed by Haig, of England, and his adherents, to be the cause of many of the ills to which human flesh is heir, and the eye does not escape its poisonous influence. An excess of the secretion of the thyroid gland, however this may occur, is now thought by many to be the essential factor in the production of that group of symptoms found in exophthalmic goitre, including the disturbances of vision, the protrusion of the eyeball, retraction of the upper lid, and the impairment of the winking-reflex. In acromegaly, the question has been raised as to whether or not the hypertrophy of the pituitary body of the brain does not, in some way, influence some unknown secretory function by which certain bodily constituents are increased, and the peculiar physical abnormalities of the disease developed.

Other diseases are supposed to be caused by normal products which are present in excess, because they are not

chemically neutralized or disintegrated, as in Addison's disease, in which the adrenals have seemed to lose their function, and as in glycosuria; or because they are not sufficiently eliminated, as in nephritis both acute and chronic and diseases of the liver, etc. Abnormal products are formed in the body in many ways. But those which arise from the fermenting and putrifying changes common in the alimentary tract, and which develop in the course of infectious processes are of special significance. The intestinal ptomains and toxalbumins are now believed to be a prolific source of very many nervous and psychic disturbances. In tetanus, it is well established that a most virulent poison is generated, and it has been estimated that 1-350 of a grain is sufficient to kill a man. It is undoubtedly a product of this kind which causes those manifold sequalæ of diphtheria, including the ocular paralysis. In typhoid fever another poison is evolved which, presumably, is the direct cause of the delirium and many other symptoms, and sometimes, also, of affections of the eyes. The same may be said, with confidence, of pneumonia and its casual infection. Rheumatism and gout are believed to be manifestations of auto-intoxication, either from some retained metabolic product or from some abnormally derived substance, or perhaps both.

To revert now more specifically to the eye itself, I assert that scarcely a disease of this organ, at least of an inflammatory character, can be named in which the cause, when not due to mechanical injury or to direct, exo-infection, does not lie either in auto-intoxication or endo- (auto-) infection. Take for example iritis. The infection of syphilis, or the toxic agent of rheumatism and gout, account for it in most cases. In other cases in which it seems to occur spontaneously, the vital resistance of the iris may have been lowered by exposure to cold or by some dyscrasia, and then some toxin in the blood may determine an inflammation. Tenon-

itis is purely akin to rheumatism, and is due to the same morbific agent. The choroid, in its vascularity, is exposed to the same toxic and infective invasions as the iris. Retinitis may always be regarded as due to some poison in the blood whether it be from albuminuria, diabetes, syphilis, leukemia, pernicious anemia or arrested menstruation. Again, optic neuritis, both in its papillary and retro-bulbar forms, is distinctly a toxic affection. The most common form of optic neuritis is that seen in connection with intracranial growths and inflammations. There is but one theory which to my mind accounts for this disease, and that is, that a toxin is developed during the progress of an intracranial growth or a cerebral inflammation which is carried to the nerve through the various spaces and lymph-channels related to it, and causes the inflammatory reaction. It is well known that nicotine and alcohol often produce retro-bulbar optic neuritis and it is to be presumed that, when these are not operative, it may be caused by other toxic principles, the identity of which future researches will reveal.

Finally, I believe, with Panas, of Paris, that sympathetic ophthalmia furnishes another illustration of auto-infection or auto-intoxication, not in the sense that it is a migratory disease in which germs are transported from the injured to the sound eye, as Deutschmann vainly endeavored to prove experimentally, but in the sense that the uveal tract of the sound eye, by reason of a lowering of its vital tone through the extreme reflex and vaso-motor disturbances kept up by a foreign body in, or injury to, the other eye, becomes truly poisoned or infected by materials in the general circulation to the extent of inducing a most obstinate and uncontrollable inflammation. More than half a century ago, that great pioneer in ophthalmic research, Mackenzie, of Glasgow, advanced the reflex theory of sympathetic ophthalmia. But it has hardly been deemed sufficient to ac-

count for all of the phenomena of the disease. But to this, add auto-infection of the parts whose vital defenses have been withdrawn by the reflex disturbance, and we have, it seems to me, a full and rational explanation of cause of this disease.

Without extending illustrations further, I will conclude by adding that while we are but on the threshold of an understanding of auto-intoxication and auto-infection, yet I believe we have advanced far enough to gain a glimpse of their verities and their import in the prevention and treatment of disease. By determining their origin and nature, means will be sought by which to avoid them or to destroy them, and the causes of very many diseases will thus be removed. In therapeutics, also, I believe much will be accomplished when we learn how to eliminate or antidote these poisons.

Admitting the infectious and toxic origin of a large range of diseases, perhaps a large majority, from which no organ of the body would seem to be exempt, the ophthalmologist, otologist, neurologist, gynecologist, surgeon and physician are all, alike, relegated to one common field of study and research and with the one common purpose of seeking and removing or making inoperative the causes of disease.

THE EFFECT OF CERTAIN OCCUPATIONS ON THE PHARYNX.

By Seymour Oppenheimer, M. D., of New York County.

The deleterious effect, supposedly exerted on the mucous membrane of the upper respiratory tract, by the occupation of the individual, is well exemplified by the granular pharyngitis and congested larynx of the public speaker. Not only do this class suffer from catarrhal affections of the mucous membrane, but as we will see later on the various forms of acute and chronic inflammation of the pharynx can be directly traced to the occupation in many instances. As certain trades cause or predispose to catarrhal inflammations of the mucosa of the entire respiratory tract, we must study not only the pharynx, but also the nasal tissues; it here being desired to lay special stress on the changes observed in the pharynx in the series of fifty cases forming the basis of this paper.

The following case will illustrate the so-called "occupation pharyngitis": Mrs. G. K., age 32 years. At present a laundress by occupation. Had always been in good health and had no trouble with her nose or throat until four years ago, when on account of reduced circumstances, she sought employment as "bleacher" in a laundry. Within three or four months her general health began to fail and she was troubled with frequent attacks of sore throat. During the periods in which her throat was not actually inflamed, there was a constant expectoration and post-nasal dropping. Examination of the pharynx showed the mucosa to be relaxed and congested, with superadded inflammation, while the nasal tissues were markedly congested and there was considerable stenosis from the turbinal swelling. The usual

treatment proved of little value until she changed her occupation, when the affection no longer caused any annoyance.

Considerable variance exists among physicians as to the effect of heat, cold and humidity upon the pharyngeal mucosa and further scientific experimentation is needed before a definite answer can be elucidated. Gradual changes of temperatures extending over the thermometer scale from freezing point to 96 degrees F. have practically no deleterious influence on the pharynx, provided respiration be nasal in character. The cavernous tissue of the nares adjusting itself to the altered thermometric conditions and from the increased blood supply to this region, additional heat is provided to warm the low temperature air, so that when it reaches the pharynx no chilling or irritating effects are appreciable, the contrary taking place when the temperature reaches the higher portion of the scale. Excessive heat, however, apparently produces morbid changes in the lymphoid tissues of the pharynx, but this as shown by the dry throat of those remaining for prolonged periods in overheated rooms depends not entirely on the degree of the temperature, but to a great extent on the presence of dust, irritating particles and the dryness of the atmosphere. Excessive cold, by chilling the surface of the body, may produce increased activity of the pharyngeal mucous membrane, even going on to acute inflammation and if the individual be exposed for variable periods of time, chronic changes ultimately take place from repeated acute attacks of angina.

Of far more importance than heat and cold to the welfare of the mucous membrane is sudden change in temperature; on a large scale this is well shown in countries where temperature extremes are prevalent, especially in the eastern portion of this country. As a general rule it may be said that where temperature changes are marked, catarrhal con-

ditions are prevalent; this applies also to certain occupations, the worker in cold-storage warehouses, coming from a room of very low temperature, out into the hot air of midsummer, is a frequent sufferer from pharyngeal affections. The degree of humidity is also a factor of vast importance and sudden changes in the amount of atmospheric moisture is productive of a greater proportion of cases of pharyngitis than is either heat or cold. In this connection must also be taken into consideration the presence of fine dust or irritating particles in the respired air. These deleterious substances may be either chemical, as occurs in drying yarns, etc., or bacterial, as in the air of the over-crowded and poorly ventilated sweat shop.

Constant inhalation of smoke is a frequent cause of "industrial" pharyngitis, as is also the breathing of acid fumes as exemplified in the following case: J. R., male, age 39 years, tinsmith by trade, had no previous trouble with his throat until about one year ago, when he commenced to work at soldering sheets of metal. A mixture of several acids was used in this process, and the fumes arising when heat was applied were a source of constant irritation. On examination, the pharynx was moderately sclerosed, with the presence of superadded inflammation. He stated that his throat had been constantly sore since he assumed this occupation and was getting worse; it was also more painful at night, after he had been at his work all day, than in the morning. As in the preceding case little result was obtained from the treatment until he ceased work for two weeks, when the acute inflammation disappeared and he had no trouble until he again returned to work, when the throat symptoms speedily returned.

The question at this point arises as to why certain occupations cause or predispose to pharyngeal affections? The solution of the query is most complex, and to obtain a fairly accurate answer would require extended study of series of

cases engaged in various pursuits. In the case just cited, the etiological factor is readily appreciable, and so it is in many similar instances, but in the weaver and allied trades, numerous factors in the etiological complex must be taken into consideration in addition to those already mentioned, the principal factors that influence the individual case being the age both as related to the appearance of the pharyngeal trouble and the period at which the individual first entered his occupation; environment both at home and in the factory is an important consideration, while the existence of nasal or general affections detrimental to the well being of the worker must also be considered.

Of the 50 cases studied, 29 were males and 21 females; the sex, therefore, was about evenly divided and apparently bore no relation to the subject. The cases were not selected, but tabulated as they were seen in consecutive order and the following points obtained, by subjective and objective examination from each: sex, age, occupation, effect of occupation on the pharynx, presence of noticeable throat "catarrh" before assuming present occupation and the variety of pharyngitis present. The youngest patient was 13 years, while the oldest was 70; there were 19 under 20 years of age and 31 who had passed this period. It was found that the age of the patient, in itself, bore no relation to the development of catarrhal affections of the pharyngeal mucosa, but of considerable interest was the fact strongly made evident that the large majority of the cases stated that the daily labor at the loom or similar trade was vastly more detrimental to those under 20 years of age than to those who assumed such occupations for the first time, when older in years. In other words, all things being equal, the younger the mill worker the more rapidly would pharyngeal disorders appear; or provided the individual already had pharyngitis, it would become worse in the youth at a much earlier period than it would in the adult.

As the cases were not selected, there were of necessity members of various trades which at first appearance, from the limited number of cases, would apparently vitiate any conclusions that might be made, but this was found not to be the case, as the elementary etiological factors were so marked that the distinct occupations could readily be placed under separate groupings and would indicate that but a few definite factors are instrumental in the production of the morbid changes. Of the separate occupations there were weavers or assistants 29, tinsmith 1, hat manufacturers 11, tailor 1, baker 1, dyers 3, fireman 1, carpenter 1, dressmaker 1, and laundress 1, making a total of 50 cases. As the hygienic surroundings and atmospheric conditions of a number of these occupations were practically identical, they can readily be grouped under two headings; first, occupations characterized principally by temperature elevation and the presence of an excessive amount of fibres and dust in the atmosphere, as in the weavers, a portion of the hat manufacturers, tailor, baker, fireman, carpenter and dressmaker, or 39 of the total number of cases. Secondly, in which the occupation was characterized by the presence of an excessive amount of deleterious chemical agents (acid fumes) in the respired air; this class was composed of 11 patients as follows: Hatters, tinsmith, laundress and dyers.

The relation borne by the distinctive occupation as a causative factor could only be solved by the history of the patient and especially by obtaining relief from the throat symptoms by leaving the trade supposedly acting as a cause. This latter, however, is practically impossible, and we must depend upon the statements of the patient in answer to this question. In every case the individual claimed that the throat trouble resulted from the occupation and in the majority this can be assumed to be true, as this class rarely change their occupation; and further evidence of considerable weight is, that when the mills are shut down for sev-

eral weeks at a time and the worker leads a more or less out-door life, the pharyngeal symptoms respond much more rapidly to treatment, often indeed without medication, attracting the attention of the individual to the improved condition of the throat. This, however, rapidly retrograded within a few weeks after resumption of work.

Dependent also upon the history as related by the patient is the answer made to questions concerning the existence of catarrhal affections, previous to stated occupations. In all the cases under 20 years, an age arbitrarily selected because no previous throat symptoms had been experienced except those resulting from occasional attacks of coryza. The answers obtained from the cases over this age, and they were in the majority, showed that the greater part had no pharyngeal disorders previously, while a small number, though troubled with previous pharyngitis, noted that it became markedly aggravated while at their occupation. Examination of the pharynx revealed three so-called forms of pharyngitis, in 13 there was inflammation, without other pathological changes, in 14 the mucous membrane was sclerosed, while in the remaining 23 there was atrophy of both the mucosa proper and the glandular structures.

Without further details, it was ascertained from the nature of the occupation and especially the duration of time the individual had worked at the same trade, that the pathological alterations were, with but few exceptions, directly dependent upon the nature and amount of foreign material in the respired air of the work room. The 13 cases of what we may speak of paradoxically acute inflammation of long duration breathed an atmosphere more or less constantly surcharged with chemical vapors during a considerable portion of the day. This class comprised a laundress, whose occupation consisted in bleaching soiled clothing, with a chemical compound of unknown formula; 6 cases (hat manufacturers) were constantly associated with various chemi-

cals, and especially mercury, used in preparing furs for felt hats; 2 mill hands were engaged in bleaching, 3 dying yarns, and 1 tinsmith, whose case was given as an illustration in extenso.

Chronic follicular pharyngitis, granular sore throat, or, as it is more frequently called, sclerotic pharyngitis, was represented by 1 dressmaker, 10 weavers, 1 fireman, and 2 felt hat finishers, a total of 14 cases; all of whose occupation was similar, in as much as the pharynx was subjected to constant irritation by minute particles of cloth, ashes, etc., in the respired atmosphere. The presence of atrophic changes of the pharyngeal tissues resulted from long-continued occupation in an atmosphere containing practically the same deleterious substances as that breathed by the sclerotic cases. Of these there were 3 hatters, 17 weavers, 1 carpenter, 1 baker and 1 tailor.

The symptoms of the various morbid changes in the pharynx were the same as those commonly observed, irrespective of occupation, and need no further mention here. All cases under the respective groups of sclerosis and atrophy were, of course, not pure cases of these pathological changes, frequently sclerosis and atrophy were present at the same time, but depending upon the duration of the throat affections one was more marked than the other and was accordingly classified from a point of the pathological alteration predominating. It was also evident that sclerosis and atrophy of the pharyngeal and adjacent portions of the upper respiratory tract were simply changes in the same chain of events, the smooth, glazed surface, to which dry mucus adhered in small amounts, being the last state of the morbid process, while subacute congestion and the various grades of sclerosis represented earlier stages of the same affection.

Two factors not as yet considered must here be mentioned, the first being the influence exerted on chronic proc-

esses by repeated attacks of acute pharyngeal inflammation, and the second being the intimate relationship existing between the nasal chambers and pharynx, both in health and disease. As is well known, repeated attacks of congestion ultimately lead to chronic changes in the tissues so subjected. This is essentially so of the parts under discussion and must be given a place, although secondary, when balancing the etiological factors in the class of cases with which we are here concerned. Intimately connected with this factor is the relation existing between the nasal cavities and the pharynx. It is unnecessary to enter fully into the physiology of the turbinal tissue, suffice it to say, that unless the nasal chambers are approximately normal in function, the other portions of the respiratory tract, and especially the pharynx, must invariably participate in the morbid process, and, as a result, in the majority of occupations here named and the environment of the people so employed, both nasal and pharyngeal tissues must suffer. In the worker at the loom or allied trade, turbinal swelling and nasal obstruction is of most frequent occurrence, both as a result of the irritating particles in the respired air and from temperature changes, so that mouth breathing with all its disastrous pharyngeal and other consequences follows as a matter of course. This is well shown even in the ordinary furnace-heated dwelling house, the extreme dryness of the air causing irritation and swelling of the erectile tissues with occlusion of the nares. Mouth breathing then ensues and, as a result, the mucus, drying, and closely adhering to the pharyngeal walls, normal secretion is prevented or markedly diminished and atrophic changes supervene. At first the nasal obstruction is but temporary, but as a result of the uncomfortable sensation caused by the adhering pharyngeal mucus, mouth breathing is continued, even when the nares are free. As the ultimate object of all such studies is the prophylaxis and treatment of these morbid condi-

tions, a few words on this aspect will not be out of place. Treatment may be dismissed from any further consideration, as it bears no relation to the occupation as a factor, and the therapeutic means used will depend upon the choice of the laryngologist.

Prophylactic measures, here as elsewhere, are very important, and much has already been done towards elevating the hygienic standard of the mill worker by improving his daily surroundings. Better ventilation, the elimination or reduction of the excessive dust in the respired air, and an increase in the age limit at which the youth is permitted to enter these occupations. As regards the prevention of catarrhal affections of the upper respiratory tract, daily washing with an inexpensive alkaline antiseptic solution will be of much value; this should be done morning and evening, and during working hours a few drops of any of the refined petrolatum oils should be placed in each nostril. This procedure has been followed out in a number of cases among weavers, etc., with the most gratifying results.

From the small number of cases here presented no specific conclusions, as applied to occupation, can be drawn, but the following suggestions are equally true, in a larger sense, as indicating broader lines than the number of cases here studied warrant. We may suggest, then, that:

1. The pharyngeal mucosa of the mill hand, under 20 years of age, is more susceptible to unfavorable influences than is that of the individual over this age.

2. The inhalation of dust, fibres and chemical agents are the factors of most importance.

3. The majority of industrial workers are affected with pharyngeal disorders, dependent to a certain extent upon the occupation.

4. In those affected with pharyngitis before assuming these occupations, the morbid changes are augmented by the work.

5. The primary pharyngeal changes are those of acute congestion and inflammation. Chronic changes follow.

6. The pharyngitis produced in part or whole by the occupation does not differ in any respect from the ordinary forms.

7. Where the nasal chambers are approximately normal, pharyngeal affections are much less frequent.

8. Hygienic measures applied to the environment of the worker are of vast benefit as regards the improvement of his general condition and therefore of the upper respiratory tract.

9. That local care as outlined will be productive of much good.

"THE TOPICAL APPLICATION OF IODOFORM IN THE TREATMENT OF TUBERCULAR AFFECTION OF *SEROUS* MEMBRANE WITH CASES."

Z. T. Lusk, M. D., of Wyoming County.

Abdominal section with irrigation and drainage is generally accepted as the most successful method of treating Tubercular Peritonitis. There is no doubt when the disease is recognized in its early stage, before the patient is too exhausted, Celiotomy is attended with good results, indeed a large percentage, especially in Primary Tuberculosis, are cured, and often decided benefit follows the operation in the more complicated forms of the disease.

While the clinical evidence verifying the foregoing is abundant, reliable and well known to the profession it not unfrequently occurs that conditions are present prohibiting this method of treatment, or at least offering only a forlorn hope of success. Among the causes of these may be mentioned errors in diagnosis, chief among which is typhoid fever, for which treatment has been continued until the vitality of the patient is so exhausted that when the mistake is discovered Celiotomy, if done, is a *dernier resort* promising little hope of recovery. Then, again, when an operation is suggested it is often obstinately refused, or so long deferred as to render it a doubtful expedient. It was under these circumstances that I was called to attend some of the following cases and the success of the treatment employed is my apology for this paper. The agent with which I accomplished unexpected results was Iodoform topically applied, and demonstrated to my mind that in it we possess a most potent remedy in the treatment of Tuberculosis of serous membrane.

My first case was K. F., blonde, age twenty, unmarried, occupation school teacher. Began noticing early in January, 1894, that she became easily fatigued, appetite poor, tongue slightly coated; a little later began having pain in the bowels with diarrhoea—was treated for biliousness without relief, and about February 1, was obliged to discontinue her school work. During the month of February, in spite of treatment she grew worse, became pale and emaciated, nausea almost constantly, pain in the bowels more marked. At a consultation of physicians about March 1st, the abdomen was found to be partially filled with ascitic fluid and the diagnosis of tubercular peritonitis was made, and they were united in the opinion that her recovery depended upon abdominal section. This was refused, she continued to fail rapidly, and on March 23, her condition was so critical that Dr. M. D. Mann of Buffalo, New York, was called to see her. He concurred in diagnosis, also that Celiotomy offered the only possible hope for recovery. So grave were the doubts of her surviving the operation and so little encouragement of recovery given that her people decided against this so-called "last chance." On April 4, the attending physician leaving town, I was requested to look after the case. Her condition at this time was one of extreme emaciation, pale, skin dry and harsh, temperature 100, pulse weak—could scarcely be counted—about 130, constant nausea and vomiting, abdomen distended, epigastrium bulging, ascitic fluid extended up to umbilicus. A distinct wave impulse on palpation, rectal alimentation had been attempted without success, appeared to induce paroxysms of pain. Opiates administered in any form aggravated nausea, and at this time she was taking absolutely nothing. The family history showed father's brother died of pulmonary tuberculosis, age twenty-six, and her mother's sister at thirty-two. While the stomach rejected medication in any form I determined to try the remedy of which I had recently read of having been

successfully employed by inunction to the shaven head in a case of tubercular meningitis, namely, Iodoform. My treatment began as follows: "An Iodoform poultice," I was pleased to call it, was prepared by mixing in a mortar 1 oz. Iodoform to vaseline 6 oz. This was spread liberally upon a cotton cloth, and the whole abdomen covered from ensiform cartilage to Pubes and extending over either side to the spinal column, and secured in position with bandage. Also gave dry on the tongue ¼ gr. Hyd. Cum. Cretae every three hours. No apparent change until fifth day, when nausea appeared less distressing. On the sixth day a fresh poultice applied. No change until the tenth day, when she appeared brighter, less nausea, retained small quantities of rice water, pulse 2 p. m. 130, temp. 99½. On the twelfth, bowels loose, pulse 128, temp. 99. From this time there was gradual improvement and on the 21st day after I saw her she retained a teaspoonful of cod liver oil given every 4 hours (Scott's Emul.) The dose was gradually increased until ten days later she was taking a tablespoonful four times a day. She continued to improve, suffice it she made a complete recovery, nodules in the omentum cleared up and she is to-day in perfect health now over five years. The Iodoform was changed from time to time during the first three months of treatment.

Case 2. Minnie K. age 8, blonde. Sister died of pulmonary phthisis at 12, and brother of scrofula at 18. Had been sick seven weeks before I saw her, under care of homeopath physician, who had treated her for typhoid fever. Her sickness began with abdominal pain, nausea and vomiting with slight fever and loss of appetite. Was called to see her July 3, 1894. Pulse weak, 140, temp. 99, stomach rejected everything, even water; emaciation extreme; abdomen immensely distended, partially filled with ascitic fluid, constantly moaning with occasional screams from pain. Dr. George M. Palmer and Dr. Mann saw her with me, concurred in diag-

onis of Tubercular Peritonitis. I had not the slightest hope of her getting better. However, covered her whole abdomen with iodoform poultices and gave small powders Hyd. Cum Cretae gr., one-third dropped dry on tongue. For three days she retained no food, on fourth day more quiet, retained teaspoonful rice water with very small quantity of Mellin's food. Changed poultice, on fifth day began to see slight improvement, retained small quantities of nourishment. Suffice it to say, her improvement was gradual. About the third week, she retained small doses of Scott's Emulsion, and made a perfect recovery, and is to-day the picture of health, over five years since her sickness.

Case 3. G. M., male, 26 years of age, traveling salesman. Had not been well for two years. About one year before had an abscess two inches belowand one inch to left of right nipple; was treated in Buffalo General Hospital for about three months, during which time he was operated upon by Dr. Phelps, when a portion of 7. and 8. ribs were removed. Examination proved it to be the result of Tubercular Osteititis, the wound healed, leaving large depressed cicatrix; following this he was able to be about, tried to do some work, but was weak, "easily used up."

The last of Dec. '95, began having pain in side, region of the cicatrix. Had been troubled with night sweats, they were now more severe; had slight chills and fever. Saw Dr. P. who prescribed remedies, but he grew weaker and more emaciated. He was unable to be about and went to the Warsaw Salt Baths. Dr. Fisher examined him, and advised him to go home, which he did, and February 10, 1896, I was called to see him. He was pale and anemic, pulse 120, temp. 100 and tongue slightly furred. He had a dry cough, short, rapid breathing, slight exertion caused dysponea. He could not lie on left side. On examination I found the right chest bulging. Percussion flat all over right side. I gave him small alterative powders, followed

in the morning with wine glass of Hunyadi water. In the afternoon of the next day, I removed with aspirator 32 oz. of fluid. Two days later, about the same amount. The right chest was covered with Iodoform poultice secured with bandage. Remedies given to regulate secretions. Then as soon as possible tonics, with cod liver oil (Scott's Emulsion.) He made a perfect recovery, was up and about by the middle of April, and by July went to work. To-day he is in active business, on good salary, healthy, hearty and well, and I have not the least doubt that he owes his life largely to the Iodoform poultice.

Case 4. W. H., male, 14 years of age. Occupation, laborer. Had been sick for three months when I saw him during which time he had been treated for bilious fever for eight weeks and typhoid fever until I saw him. I found the abdomen tympanitic, nausea and vomiting, temp. 101, pulse 130. Night sweats, pale and emaciated. Skin dry and scaly—abdomen distended, and partially filled with fluid, wave impulse palpation—stomach rejected everything. Had been made comfortable by morphine hypodermically. I began treatment as in previous cases, with no perceptible change for two weeks. The extremities were cold and clammy. Alcohol baths were used, with strychnine gr. 1-20 every four hours, hypodermically. Soon began to improve and to retain liquid nourishment. On the sixteenth week cod liver oil was given every four hours. He gradually improved and in six months was able to be up and about, and at the present time considers himself well. It is now two years since his sickness.

Case 5. J. M., age 13, blonde, had never been vigorous, had asthma since five years of age; pale, anemic and emaciated; had no restful sleep on account of paroxysms of asthma. History of tuberculosis on paternal side. In December, 1898, began having pain in the right knee. No relief following the usual home remedies I was called to

see him. Found him in bed, skin hot and dry, temperature 101, pulse 120, tongue slightly coated. Right knee was swollen, red and tense, leg flexed upon thigh, slight movement caused sharp, lancinating pains. He had had no asthma since this attack. He had received no injury, and could assign no cause for trouble. Knowing the tubercular history, and the insidious advent of disease, my diagnosis was tubercular synovitis. Enveloped the knee with iodoform poultice, and treated general symptoms. As soon as possible gave cod liver oil. Inflammation gradually subsided, and in March began passive motion. In April a small abscess developed in upper border of Popliteal space, which was opened and discharged freely. It continued to discharge until June, when I left on my summer vacation. On my return in August, there was still a thin sanious discharge. I enlarged the opening and removed small pieces of careous bone, injected iodoform emulsion. The discharge ceased, and he is now in good health. The pale cachectic look gone, free from asthma, indeed, is in better health than ever before.

In treating this case I made a discovery which I consider of value, and that is that iodoform is freely soluble in vaseline. Mixed with vaseline in proportion desired 1 to 10, or stronger, and heated in water bath. When the vaseline is melted the iodoform becomes dissolved and will not precipitate on cooling. When we desire to use it for injection it is quickly rendered soluble by heat. I found this a convenient method in treating suppurative glands in the groin. After cleansing with Peroxide Hydrogen, I injected in semifluid form; the ducts leading to the infected glands would be swelled up as they were filled. The result was very satisfactory.

These cases were unmistakably tubercular. They had been seen and treated by physicians of good standing, and unquestioned ability, yet, in spite of their treatment they

continued to grow worse. When I first saw them the apparent end was near, yet they recovered, and are alive and well to-day. That they owe their lives to iodoform there can be no doubt. In what manner iodoform accomplishes these results has been a matter of much speculation. That the bacillus of tuberculosis is not destroyed in a 10% emulsion is well known. How then, can it arrest its destructive processes? It is well known that upon certain soil tubercular bacillus remains inert. That it requires a special environment in order to thrive. When that condition is present it displays its destructive power with astonishing rapidity. Celiotomy has established one important fact, and that is that the destructive action is arrested, certainly it is not destroyed *per se*, but important changes are wrought upon the soil upon which it derives its support. Its feeding ground is rendered barren; its power weakened, and the leucocytes thus fortified are enabled to complete the work. In a similar manner iodoform accomplishes a like result by its absorption, the soil upon which it has been nourished no longer furnishes a healthy environment. Robbed of its necessary support it becomes helpless and weak from starvation, and becomes an easy victim of the leucocytes, the circulation is cleared of the destructive elements of their toxins, reconstruction of injured tissues occurs, and the health of our patient is restored.

NOTES ON URETHRAL CATHETERISM, CATHETERS AND BOUGIES.

By J. W. S. Gouley, M. D., New York County.

1. These annotations are intended as hints to physicians who have not yet become experts in the art of urethral catheterism,† and as warnings to auto-catheterists who have not acquired the skill and experience needed to cope with difficulties such as are often encountered in the use of bougies, sounds, and catheters. Under ordinary circumstances, few manipulations seem simpler and easier than the passage even of a rigid catheter to relieve a distended bladder. But let a wrong direction be given to the instrument's point, or be there some other obstacle to its progress bladderward, such as a stricture or an enlarged prostate, the catheterist's tribulations begin. He is baffled, he loses self-control, his mind and hand wander, and he is oblivious of the relative anatomy of the urinary conduit and of the character of its texture, which, unfortunately for the patient, a high authority has advised him to "forget!" Before recovering from his mental confusion he makes a desperate, violent onward push that sends the catheter, perhaps an inch or two inches, into the ambient tissues, to the great distress of the sufferer, who, seeing blood issue instead of urine, frantically clamors for relief or pitifully groans from the pain inflicted, and is soon utterly demoralized. The picture just drawn is but a sketchy outline of what often occurs from unskillful catheterism. Urethral laceration,

†The inexact term *catheterization* is too often used by writers and teachers instead of catheterism, derived from the Greek καθετηρισμός—a putting in of the catheter—which is Latinized into *catheterismus*. Gallicized into *cathétérisme*, and Anglicized into *catheterism*.

false routes, and other accidents are generally averted by observing the rules given, from the Celsian age to our time, for the performance of this delicate operation.

2. The term catheterism is used not only to convey the idea of putting in a hollow tool for the relief of a bladder full of urine, but for the introduction of instruments designed to explore or to irrigate the urethra and bladder, to crush vesical stones, to dilate the strictured urethra, or to remove foreign bodies.

3. For the sake of beginners, it may be well, before going farther, to premise a short account of the history, nature, names, uses, and care of some of the instruments employed for catheterism. Of the history, young physicians need to learn enough to be cautious in their assertions and in their claims to new inventions or modifications, and thus elude the literary fangs of the carping critic, or escape many acrimonious controversies. Of the nature, names, uses, and care of surgical instruments, the knowledge of hospital internes is sadly deficient, and ordinarily they care little for instruction in these particulars. The consequence is that ill-used instruments are soon cast away or relegated to the cutler, into whose hands they are too often delivered in a hopelessly damaged condition. Consistency in asepticism and success in treatment demand that the young physician shall know how to take proper care of his instruments, besides understanding their principles of construction and action, and being able to put together, for immediate use, those composed of several parts, and to dismount them for cleansing. Some surgical works indicate the manner of accomplishing these purposes, but object lessons are indispensable. The interne should, therefore, frequently visit the surgical arsenal, examine the instruments with care, take them apart and remount them, from time to time, until he shall have acquired the needed knowledge.

4. It seems highly probable that tools for drawing off urine from the bladder were devised long before the solid dilators. In all likelihood the original catheters were straight reeds, curvature being the outcome of mature experience. The first authentic account of curved hollow cylinders was given by Celsus, who described them as copper pipes of a length of fifteen fingers' breadth, and gave directions for their use in ridding the bladder of accumulated urine. Good examples of these curved metal tubes were unearthed from Pompeii.* The word catheter was employed by Hippocrates to signify any kind of tent for introduction into fistulous tracts following wounds, but the hollow cylinder for drawing urine from the bladder is not mentioned by that encyclopædic writer; it was, however, Latinized by the Romans, and is used in some of their works to signify an instrument for drawing urine, named by them *fistula*, or *syringa*, a pipe. They used the word *specillum*, which is equivalent to probe, for what in English is now named a sound, and catheter for the tubular instrument designed to empty the bladder. For probe the Spanish use the word *tienta*, from *tentare*, to search into. *Catheter* literally means a thing to let down or put in, from κατά, down, and ἱέναι, to send; or from καθίεναι, to introduce, to send down. *Sonda*, sound, is from *subundare*, to submerge—*sub*, under, and *unda*, a wave. *Algalie* and *algalia*, used by the French and Spanish, are from the vulgar Latin *argalia*, from the vulgar Greek ἀργαλειον, which is derived from the classic Greek ἐργαλειον, meaning a tool, an instrument.

5. From what precedes it is evident that the terms sound,

*A kind friend purchased, at Naples, and gave to the writer an excellent *replica* of one of the curved Pompeiian copper or bronze catheters. It shows the sigmoid figure (adopted by Petit two centuries ago); the single eye appears to be rectangular, and is two millimetres in breadth, six millimetres in length, beginning at seven millimetres from the point, along the inner aspect of the curve and not on the side, as is the catheter eye of the present time; the vesical extremity, for a centimetre, is conical; the shaft is thirty centimetres in length, and the calibre six and a half millimetres—equal to No. 10 of the English scale.

catheter, and algalia do not imply that the instruments are solid, hollow, or even cylindrical, or that the catheter or algalia is intended to draw off any fluid; therefore, these arbitrary names are absolutely inexpressive, but, by general consent among English-speaking people, are employed to signify the one, a solid cylinder, and the other, two, hollow cylinders. Aside from the inappropriateness of the names employed to designate these instruments, they are too often confounded, owing to a lack of general consensus among nations as to what should be the precise designation of each instrument. Solid metal cylinders are used to sound the bladder, but hollow cylinders are also used for the same purpose. A catheter, in the English sense, is often employed as a stone searcher, but a sound, in the same sense, can not be utilized in drawing off urine, since it is a solid cylinder. The instrument ordinarily called in English a sound is intended not only to sound the bladder, but to dilate the strictured urethra. As already noted, these terms are used in entirely different senses by several nations, notably the French, Italian, and Spanish, who call *sonde, sonda, algalia*, the instrument named catheter by the German, English, and American nations. It is hoped that more distinctive and accurate names will eventually be given to these tools, but the question of rightly naming them can only be settled on a proper basis by duly delegated persons representing the medical profession of the nations. For the present, in English, let it be understood that catheter is intended to designate an instrument for drawing fluid from a cavity, and sound, an instrument for sounding and for dilating.

6. Catheters and other tools designed for "putting into" the urethra and bladder should be examined with reference to the substances of which they are composed, to their form, to their calibre, to their cavity, to their apertures, to their curvature, to their length, to the shape of their proximal

and distal extremities, and to their adaptation to the particular uses to which they are destined. This study is of much importance in consideration of the fact that catheterism is performed so often and for so many purposes besides drawing off urine.

7. The composition of catheters has a long and interesting history, of which, however, a brief abstract only is needed for the purposes of this note. It has already been stated that tubes for drawing urine from the bladder were originally non-metallic; that the precise time when metals, such as copper and bronze, were employed in their construction is unknown, and that the first written evidence of the use of metallic catheters is from Celsus, but that they were in common use long before his time. The metals long afterward employed in the fabrication of catheters were lead, tin, silver, and gold, and very recently German silver and aluminum bronze. The urethral false routes so frequently made by incautious catheterists with rigid metallic cylinders induced surgeons to devise divers means to avert the danger, without thinking that these accidents were owing more to the performer than to the instrument. Leaden catheters were used in the ninth century by Rhazes on account, as he believed, of their adaptability to such forms as might be suggested by contortions of the diseased urethra. Later, narrow bands of silver, twisted spirally, were made into catheters. Of such material, the spiral catheter of Solingen covered with leather (1684) and the vermicular catheter of Roncalli (1741) were made. From the times of Solingen and of Roncalli the same principle of action of these catheters has been carried out by many surgeons, and nearly all spiral or vermicular instruments have since been described as new inventions.*

*Several years ago Dr. Stuart Eldridge, of Yokohama, gave the writer an admirably worked spiral catheter, made, it is supposed, by a Japanese artisan—when, the donor could not ascertain.

8. In the beginning of the eleventh century, Avicenna used soft catheters made of the skins of different animals, coated with some sort of varnish to protect them from the action of the urine. Fabricius of Aquapendente was the inventor of horn catheters and of others made of bands of linen coated with wax. Catheters of chamois and of dogs' skins were used by Van Helmont and by Troja. Those of ivory gelatin, prepared by immersion in dilute hydrochloric acid, were invented in 1832 by Cazenave, of Bordeaux, who, in 1842, read a paper on the subject before the Paris Academy of Medicine. These catheters were used by few surgeons besides Cazenave, and are now regarded as mere curiosities, although the inventor strove to revive their use by publishing, in 1875, an extended essay on their merits.

9. This brings us to the consideration of the soft catheters in use at the present time and known as "gum catheters;" but before this a brief summary of their evolution will be made. One of the first hints, though not the earliest essay, emanates from Hérissant, who in 1763 suggested that India rubber dissolved in ether might be used with advantage in the fabrication of catheters and bougies, and Thedn, of Berlin, carried out the idea by coating silken cylinders with an elastic varnish dissolved in ether. Cazenave gives a formula of the varnish for coating soft catheters, but does not say whether it was ever employed by Laserre or by any of the other manufacturers of so-called gum instruments. It is as follows: One part of linseed oil boiled with litharge, one-third of a part of succinum, one-fourth of a part of oil of turpentine, and one-twentieth of a part of India rubber. In 1779, Bernard, a jeweler, of Paris, presented to the Academy of Surgery soft, flexible catheters and bougies made by him, with the object of substituting them for metallic and wax instruments. These catheters and bougies were then called gum-elastic instruments, and are still styled in

France *instruments en gomme*, but it was soon ascertained that no India rubber entered into their composition. They were made of a silk fabric coated with boiled linseed oil, and dried and polished. Dr. Pickel, of Würzburg (1785), published the following formula for making the varnish of the so-called gum instruments: One part of melted succinum, one part of oil of turpentine, and three parts of common cabinet-maker's varnish, which consists of linseed oil boiled with white litharge, subcarbonate of lead, red oxide of lead, or sugar of lead. This mixture was used to coat a catheter or bougie of silk fabric. After three such coats the instrument was dried in an oven at a temperature of 70° F. for twelve hours, and then polished with pumice. It afterward received from fifteen to eighteen more coatings and was dried and finally polished with oil and tripoli. This process has since been variously modified, simplified, and improved; some of the makers using entirely different coatings, some of which contained none of the substances mentioned in Pickel's formula. The exact nature of the several processes of catheter and bougie making now employed in France, Germany, England, and the United States is not known, because each manufacturer has secrets of his own in the way of braiding the cylinders, in the composition of the material for coating the braid, and in the manner of its application; in the method of polishing, and in the time consumed for the perfection of the instruments. The interior of the instrument should be as thoroughly coated and nearly as smooth as the exterior, otherwise it is soon fouled and infected with micro-organisms. The best quality of silk should be used in the preparation of the cylinders and the braid should not be too close. The coating should be translucent and highly elastic, and should not be so thick as to render the braid invisible.

10. Great quantities of inferior catheters and bougies are still imported* and sold in different parts of this country. Their framework is of cotton coated with a varnish which hardens and soon becomes so brittle as to crack transversely all along the shaft, each crack being a fit lodgment for colonies of bacteria besides being a point of election for fracture.

11. Trials made with divers kinds of flexible web catheters, treated with ordinary care, have given results worth recording. Lisle-thread and linen catheters, after being used fifteen or twenty times, often show many transverse cracks close together in a space extending four or five inches from the eye, and are thereby rendered unfit for further use; while in many instances good silk catheters used several times every day were free from cracks and in good condition after having been so used two hundred, and even three hun-

*It may be interesting to know how much the catheter industry has increased in this country, and to what extent importation has lessened in the past eight years. The following figures, obtained from one of the manufacturers, show the number of imported English, French and German soft catheters and bougies in 1891 and 1898, and the number manufactured in the United States:

	1891.	1898.
Cheap commercial catheters, English	300,000	125,000
Better qualities of catheters, English	40,000	15,000
Better qualities of catheters, French	35,000	20,000
Better qualities of catheters, German	10,000	15,000
Soft India-rubber catheters, English	30,000	None
Cheap commercial bougies, English	45,000	20,000
Better qualities of bougies—English, French, German	15,000	10,000
Total imported	475,000	205,000
Cheap commercial catheters, American	100,000	350,000
Better qualities of catheters, American	275,000	300,000
Soft India-rubber catheters, American	170,000	250,000
Cheap commercial bougies, American	30,000	50,000
Better qualities of bougies, American	20,000	30,000
Total home-manufactured	595,000	980,000

Thus, in the lapse of a few years, this industry has been developed to a degree which has already permitted in a year the exportation of one hundred thousand web catheters to England, Ireland, Scotland, France, Germany, Spain, South America, Australia and India. There is also a large export trade in rubber catheters. These American catheters and bougies are fully equal to those manufactured in foreign countries, and some of them are even superior, notably the commercial and the best woven-eye silk catheters, as will be seen by a comparison of the tensile strength and of the quality of the varnish of the different instruments in use. The American (Tiemann's) India rubber catheters are superior to those of foreign importation in the construction of the eye, in the high polish of their surface, and in the smoothness of their interior.

dred times. Physicians will find it to their advantage to decline purchasing any but the best silk-web catheters, for, though their first cost is nearly double that of the others, they are so much more durable than the lisle-thread or linen instruments that in the end they are the cheapest and least liable to break, while they can, without injury, be disinfected by means of formaldehyde vapor. It should be noted that nearly all these catheters harden when kept idle for a long time, and are to be cast away as soon as they lose their suppleness, for it is then that they are most likely to break during introduction or extraction. For use in warm climates a special coating is given to catheters and bougies, otherwise they stick firmly together and are thus spoiled unless dusted with talc.

12. The silk-web and the India-rubber catheters now replace very advantageously the metallic for drawing off urine, and few physicians think themselves warranted in using for that purpose instruments of metal or of any other rigid substance, except in certain conditions of the urethra requiring catheterism upon a conductor, or in cases of false routes relievable only by Mercier's invaginated catheter. The so-called silver prostatic catheter, with extraordinary curve and length, is a thing of the past which—with all due respect and veneration to Sir Benjamin—seems as if it had been intended for a urethral lacerator and prostatic plow, although, in good hands, it has often passed into the bladder without causing serious injury. The ordinary curved, elbowed, and double-elbowed web catheters, which average fourteen inches in length, answer well for drawing urine in cases of the very largest prostates, and the so-called prostatic web catheter of exaggerated curve is worse than useless. The writer has never seen a case requiring the use of this unsightly and unhandy instrument of torture. The catheter with funnel-shaped distal extremity for insertion of the irrigation nozzle is a superfluity on a par with the

apertures for cat and kitten; only here the kittenish opening is the better, because safer, since, for obvious reasons, it is not wise to force a large and rapid stream into any bladder needing irrigation.

13. All sorts of fanciful catheters of silk, linen, ramie, or cotton web, or of caoutchouc, with wings or other projections near the vesical end, have been invented in the past thirty years, and soon rejected as worse than useless. One of these, in the writer's collection of confiscated catheteric curiosities, is of vulcanized grayish India rubber with a rich golden-yellow raw-silk thread wound spirally around the whole shaft—suggesting a fit habitat for millions of tiny organisms. The length of this extraordinary tool is fifteen inches and a half; its diameter corresponds to No. 10 of the English catheter scale; its countersunk eye is blind, for it had never been cut open, and it is probably the only specimen that had been made by the house of Tiemann & Co. Internal or external re-enforcements for rubber catheters invite uncleanness. Those who invent such accessories do so with the idea of remedying the flimsiness of thin-walled catheters, which makes their introduction so difficult, whereas the desired object is so simply accomplished by giving each instrument sufficiently thick walls without much interference with the needed calibre of its lumen.

14. The properties of good web catheters may be stated as follows: 1. They are thoroughly, but not too thickly, coated with varnish inside as well as outside and highly polished; the varnish is pliable, not apt to crack, and resists the action of moist heat up to 212° F. (Early in 1899, the Ellwood Lee Company revived the translucent catheters, which about fifteen years before had a short vogue on account of their easily stripped thick coating of collodium. The new varnish used by the Lees in a comparatively thin layer is far superior and promises better results. It is, however, still on trial. Another elastic varnish, the "pega-

moid," of secret composition, has lately been suggested for coating catheters.) 2. In length they need not exceed thirty-three centimetres (about thirteen inches). 3. In diameter they vary from two to nine millimetres. 4. The distal extremity of their single oval eye is one centimetre from the point, which is smooth and rounded; this eye, in curved,* elbowed, and double-elbowed catheters, is generally lateral, but in some of these instruments the eye is superior, corresponding to the concavity of the bend, and in other cases the eye is omitted, the catheter being open at both ends, or, in addition to the eye, the vesical end is open for catheterism upon a whalebone conductor. 5. Good web catheters are firm but pliable, never rigid, from the proximal to the distal end; a web catheter with a rigid vesical extremity is a dangerous instrument, liable to cause false passages in the deeper regions of the urethra. 6. The form of the vesical extremity is in accord with its intended uses; straight web catheters are not so safely and easily used as the curved, elbowed, or double-elbowed, the curved form being the most easily introduced into strictured urethræ and in the majority of cases of enlargement of the prostate. 7. The tensile strength of the different qualities of web catheters was ascertained by experiment to be as follows: That of an English commercial catheter was forty-two pounds, that of an American commercial catheter was fifty-four pounds, that of an American lisle-thread catheter was fifty-six pounds, that of an American silken-linen catheter was sixty pounds, and that of an English silk-web catheter was eighty-five pounds. An American silk-web catheter of best quality was then tested to one hundred and fifteen pounds without breaking, but the varnish was stripped off at each end.

* Sir Everard Home was the first surgeon to suggest that the tissue of web catheters be braided upon a curved stylet, in order to obtain a curved instrument which will always maintain its curve.

15. When it is necessary to retain a catheter in the urethra and bladder, the physician should select one which has not been too thickly coated with varnish. The highest grade of catheter is not always the best for this purpose, because in the course of twenty-four hours the urine filters through the internal wall of the catheter, the silk webbing is saturated, swells irregularly, and uplifts here and there the coating of varnish, which soon scales off; while the lisle-thread, silken-linen, and those silk catheters with thin external coating resist longer the action of the urine, and do not lose their smoothness after being retained forty-eight hours in the bladder. If, however, the interior of all web catheters were thoroughly varnished, and thus rendered impervious to moisture, there would be no irregular uplifting of the surface and no scaling.

16. The American commercial catheters have lately been much improved in quality, and they may be found very useful in hospital as well as in private practice. Their cost is little as compared to that of the higher grades. A catheter of this kind may be used for a single day and thrown away, or may be repeatedly boiled without injury, and used as long as the surface of the instrument retains its smoothness. These improved instruments are known as "ten-cent catheters."

17. No catheter whose surface is fissured or otherwise roughened should be passed into the human urethra, because it would not only irritate this canal, but convey therein septic germs. For general use, physicians will find it advantageous to purchase the higher grades of web catheters, because, with proper care, they last long and retain their suppleness and smoothness. After having used an American silk-web catheter three hundred times, its surface was found to be as smooth as in the beginning. The instrument was then retired from active service to be preserved as an illustration of the excellence of home manufac-

ture. Another American silk catheter was used twelve hundred times by a patient, and was set aside only because its surface had become irregular, although it was not cracked.

18. Web and rubber catheters are much injured by fats of all kinds, by glycerin, by saliva, and by vaseline, which, however, seems to be the least hurtful of these lubricants. If used at all, it should be in the smallest quantity—just enough to very thinly coat the catheter. Some physicians reject not only the fatty but all other lubricants, and think it sufficient to moisten the catheter with warm water. More soft catheters are destroyed by the excessive use of fatty substances than by any of the many other abuses to which they are subjected. Therefore there is need of a lubricant which shall not be irritating to the urethra, and which shall contain no fat and no free alkali to deteriorate the varnish of web catheters and soften rubber catheters. After examining different substances it was thought that a watery solution of dry soap, with the introduction of some ingredient to add lubricity to its viscidity, would be likely to answer the purpose. Soap, deprived of glycerin and free alkali, is an efficient and unirritating lubricant, when mixed with a decoction of quillaja and duly sterilized. The following is a modification of the formula for a saponic lubricant, published in the *New York Medical Journal*, July 22, 1893:

℞	White Castile soap, powdered	℥j;
	Mucilage of chondrus crispus	f℥iij;
	Water	f℥iij;
	Formalin (forty per cent.)	m x;
	Thymol	gr. v;
	Oil of thyme	m v;
	Alcohol	m xv.

Mode of preparation: Heat the soap and water, and stir until a homogeneous slime is formed; then add the three ounces of mucilage (made of the strength of one ounce of chondrus crispus to the pint of water). When cool, pour in the formalin, then the thymol and oil of thyme mixed with the alcohol; stir, strain, and keep in a covered vessel until all air bubbles have vanished. The result is an opalescent, slimy substance, of the consistence of honey, which should be put up at once in two-ounce collapsible tubes and sterilized. The chondrus crispus is substituted for the quillaja of the original formula because of the objectionable quantity of alcohol in the tincture, and because quillaja decoction imparts to the mixture a dirty pinkish tint, whereas the chondrus crispus mucilage is colorless. The *Cetraria islandica* was tested repeatedly and found unsuitable. The lubricant, in its present form, is sufficiently viscid, adheres well to the surface of all instruments, does not lump, and is unirritating to mucous membranes. The same quantity of chloral hydrate, or half the quantity of chloroform, or thirty grains of boric acid, may be used instead of the formalin, if desired, since it is intended solely as a preservative of the mucilage.

19. All web catheters should be kept at full length, and never coiled; otherwise the varnish will surely crack.

20. Web catheters should be loosely wrapped in dry antiseptic gauze, and preserved in tightly closed metal cases until wanted for use.

21. Before using a web catheter, it should be sterilized in formaldehyde vapor and be momentarily immersed in warm Thiersch solution to prevent cracking of the varnish, particularly during cold weather.

22. After using a web catheter, it should be well washed by forcing a stream of water through the instrument, which should then be dipped for a moment in Thiersch's solution. It should then be thoroughly dried,

wrapped in antiseptic gauze, and inclosed in a metal case. Catheters may be carried in hollow walking sticks, but never in the pockets of patients.

23. All web catheters are liable to harden, lose their suppleness, and be unfit for use in the course of a few years, especially when they have not been in use. On the first appearance of the hardening process, the instruments should be cast aside.

24. Soft India-rubber catheters should be kept at full length, never coiled, and should be wrapped in moist antiseptic gauze and preserved in tightly corked glass tubes, because exposure to the air leads to rapid oxidation, which causes the instruments to become hard and brittle.

25. Before using a rubber catheter, it should be sterilized in formaldehyde vapor and momentarily dipped in Thiersch solution warmed.

26. Rubber catheters become brittle in about two years, and sooner if unused and exposed to the air. But, when daily lubricated with fats, they seldom last more than three or four weeks, then swell, lengthen, and become so soft as to be liable to be torn across during withdrawal. Several inches of such deteriorated rubber thus often remain in the bladder.

27. When it is possible to teach a patient the use of the catheter, perhaps the safest instrument that may be placed in his hands is the "velvet-eyed" India-rubber catheter, which he must cleanse thoroughly before and after its employment.

28. Metallic catheters, with very few exceptions, should not be employed in attempts to relieve the distended bladder, because of their likelihood to damage the urethral canal and plow their way into the substance of the prostate, sometimes even when introduced with ordinary care. Being absolutely rigid, they can not readily follow the abnormal incurvations of the urethra common to multiform

enlargement of the prostate. The so-called prostatic catheter is particularly dangerous, for it seldom reaches the bladder without detriment to the urethra, and too often finds lodgment in the recess of some false route, which, perhaps, it has made. When a false route renders impossible the passage of ordinary instruments, the contrivances known as Hey's and Mercier's modes of catheterism are generally successful, Hey's method consists in passing, as far as, but not into, the mouth of the false route, a silk-web catheter, No. 9 or No. 10 (English), armed with a curved stylet, which is withdrawn with one hand at the same moment that the catheter is pushed toward the bladder with the other hand, when the instrument overrides the false route and enters the bladder. Mercier's method consists in the use of two catheters, which together he has named the invaginated catheter.

29. India-rubber or caoutchouc catheters, known more than forty years ago, were little employed until the year 1873. The first were of pure caoutchouc and so flaccid that they easily collapsed. On this account vulcanization of the substance was resorted to in order to increase its firmness, but even then the catheters thus made gained little favor on account of their unpolished surface, their clumsiness, and their necessarily thick walls, which reduced the bore to a minimum. Sundry improvements in their construction were afterward made, and the first notice in this country of the improved catheters was given in 1873 by the late Dr. John D. Jackson, of Kentucky. These highly polished soft vulcanized caoutchouc instruments were styled Nélaton catheters and were made in Paris by Jaques. They were afterward further improved in New York and Boston. The attention of the manufacturers has been directed to several defects in the improved catheters. These defects are: 1. When the lumen is very large, it is at the expense of the walls; the instrument is then so flimsy as

to be unfit for use. 2. When the walls are very thick, the lumen is too narrow. 3. When the oblong eye* is too broad and half an inch from the extremity, the instrument, during introduction, doubles upon itself at the middle of the eye, which is the weak point; this eye should therefore begin at about five millimetres from the extremity and be of the capacity of the lumen and no more. The lateral eye, however well made, being the point at which fracture is most common, may, with advantage, be omitted, and the instrument left open at the vesical extremity (such caoutchouc catheters with well-rounded ends were used for twenty years by a patient, who said that they never caused irritation and were of easy introduction). 4. When the vulcanized rubber used in the fabrication of catheters contains an excess of vulcanizing material, it soon hardens and becomes brittle, hence the frequent fracture of these instruments in the urethra or bladder; and when the materials are inferior or insufficient the catheters swell and lengthen greatly after being used for a short time.

30. *Bougie*, *candela*, *cadelula*, *candeletta*, *rirga*, *cerea* are the names by which this tool has long been known among the Latin nations. The term bougie is one of the many examples of the perversion of words and of the arbitrary meaning given them. Thus Bijiyah, Bougeiah, Bugia, Bougie are among the modern varieties of the name substituted for that of the Roman colony of Saldaa. The Roman town was built upon the declivity of a mountain at the mouth of the Aduse River one hundred and twenty-two miles east of Algiers. The present town lies upon the ruins of the ancient settlement, which was invaded by the Vandals in the fifth century, but which, from the year 708, was under the domination of Arab conquerors, and then followed the fortunes of divers Berber dynasties; owing its

*Multiple eyes in catheters of all kinds have long since been discarded for well-known reasons which need not be given here. Even two-eyed catheters are now among the curiosities of the surgical arsenal.

name Bijiyah to the Berber tribe of Bedjaia (1068); En-Nacer, the founder of the new town, having tried in vain to give it his name. The place was named Bugia,* probably by the Spanish, who took it in 1509, and retained possession until 1555. It afterward passed into the dominion of the Dey of Algiers, and, in 1833, was occupied by the French, who call it Bougie. For many centuries it had been a thriving seaport, at one time a safe harbor for Algerine pirates (hence its invasion by the Spaniards) and a trading station for metals, oil, and wax, brought from the interior by the Kabyles. The wax and candles of the town of Bougie were much valued in the markets of southern Europe,† particularly in those of France. The populace and traders, ever prone to abbreviate regardless of propriety, substituted for Bougie-wax candles, wax bougies, then suppressing the wax and naming all kinds of candles bougies, and finally giving the name of bougies to all cylindrical urethral instruments, whether of wax or of other substances. The word has been so long used in medical language that it would now be unwise to substitute any new name for bougie, inexpressive as it is of the uses for which it is intended. This term bougie will therefore continue to be employed to signify an instrument for exploring or for dilating some of the excretory ducts of the human body until the right term is coined by properly constituted authority.

31. The time of the invention of urethral bougies can scarcely be fixed with certainty. The following are the only sources of information which have been accessible to the writer. Andrea Lacuna (1551), a Spanish physician

*The writer's attention was directed by a client to the Italian word *bugia*, which means a lie, with the suggestion that it might be allied to the medical term, but he has since ascertained that *bugia*, lie, has nothing whatever to do with the town of Bugia, but is related to the Provencal *bauza*, deceit, the verb being *bauzar:* to the old French *boiser*, to cheat, *boise*, fraud; and this to the old German *bosa*, badness, roguery.

†The Venetians, who were the first to make known wax candles in Europe, had learned their use from the Arabs.

thought that bougies were invented by Philippe, an itinerant Portuguese charlatan, who communicated to him his mode of producing them. They were made of wax, with a central longitudinal wick, and were then introduced as far as the bladder for the diagnosis and treatment of "caruncles or carnosities." The spot in the bougie where "a caruncle or a carnosity" was supposed to have left an impression was further excavated, or the calibre of the bougie was lessened by pressure and rotation between two hard bodies, and this space filled with an unguent in which entered acetate of copper, yellow sulphide of mercury, vitriol, alum, vinegar, litharge, etc. The bougie, thus prepared, was introduced into the urethra so that the medicated part acted upon the "caruncle." Amatus Lusitanus (1554), a Portuguese physician, said it was he who, during his stay at Lisbon, had taught Philippe the manufacture and use of these bougies, and that he, Amatus, was indebted to Professor Aldereto, a physician, of Salamanca, for his knowledge of the bougies. Alphonso Ferri, of Naples, asserted, in a work printed in 1553, that he had used the unguent and bougies as early as 1548. However, the use of this unguent was described in the sixth century by Alexander of Tralles. Ferri had used for urethral exploration stems of malva, parsley, and fennel; also flexible leaden cylinders, which he sometimes introduced as far as the bladder. These leaden cylinders were by others rubbed with mercury, which rendered them so brittle that the process was soon abandoned. Petronius, Paré, and many other physicians of the time made use of the unguent, more or less modified in its component elements, and of the several bougies, medicating them with the object of destroying the supposed "caruncles and carnosities." Giannatus, an Italian charlatan, treated Charles IX for pretended "carnosities," employing bougies medicated with an "escharotic ointment." In speaking of tin bougies, Jour-

dan said that they were generally cylindrical, but that Francisco Diaz suggested for them a triangular form and pointed (conical or wedge-shaped (?)), in order that they might more easily pass beyond the "carnosities." Here, then, is an early link in the evolution of conical bougies. Soon after the time of Diaz whalebone bougies were used, but was soon given up. Daran* revived in France the use of medicated bougies and published many "cures," but some of his contemporaries, better instructed, soon showed that his good results were due to the mechanical dilatation effected by the bougies rather than to any medicinal action of the substances which entered into their composition.† It was not until the time of Thedn and Bernard (in the latter part of the eighteenth century) that elastic bougies were made for the purpose of dilating strictures, and these bougies have since been undergoing improvement in construction and form from the hollow cylinder to the solid, from the straight to the elbowed, and from the conical to the olive-tipped.

32. Whalebone bougies were used in France early in this century and also in the United States. Dr. H. G. Jameson (*Medical Recorder*, 1827) spoke well of the utility of whalebone bougies of "the size of a small knitting needle" in the treatment of urethral strictures. Whalebone bougies are of two kinds—those with olivary point and elbowed, about one millimetre in diameter, to serve as conductors for larger instruments, and those for the dilatation of narrow strictures. The second, also elbowed and olive-pointed, are not over one millimetre in diameter for the first three inches, thence increasing gradually in diameter, so that at five inches they are equal to Nos. 2, 3, 4, 5, 6 and 7, English

*In an assembly of ladies and gentlemen, accidental mention was made of Daran, whose name was constantly before the people, for he did not hide his light under a bushel. One of the ladies, hearing it, asked, "*Quel est donc ce Monsieur Daran?*" A wit quickly replied, "*C'est un homme qui prend nos vessies pour des lanternes.*"

†*Observations chirurgicales sur les maladies de l'urèthre traitées suivant une nouvelle méthode.* Par Jacques Daran. Nouvelle édition, 1748.

scale, the set comprising six bougies, as indicated by these numbers. All whalebone bougies require to be thinly coated with carbolized vaseline and preserved in metal tubes; otherwise they become dry and brittle and are soon destroyed by parasites. It does not seem necessary to do more than make bare mention of some of the many kinds of bougies used from the time of Bernard—as those made of catgut, recommended by Dr. Dease, of Dublin, in the last century; of gentian root, of slippery-elm bark, of prepared sponge (Aliqué); of the œdalic bougies of Lioult (1828); of the air dilators of Ducamp and Arnott; of the elbowed bougies of Benjamin Bell (1793) and of Whateley (1806); of Ducamp's wax-tipped bougies for taking impressions of strictures, and of Bigelow's gutta-percha bougies for the same purpose; of Olioli's urethral stenosiometer; of the metallic "ball probes" of Sir Charles Bell for the exploration of strictures; of Leroy d'Étiolles's soft *bougies-à-boule*, and of the metallic bulbous bougies of Otis.

33. Of the divers sorts of urethral and urethro-vesical catheterism, only the exploring, dilating, evacuating, and irrigating need be examined on this occasion. The importance of the subject warrants the repetition that catheterism demands the utmost deliberation and gentleness, the greatest steadiness and lightness of digits, the clearest conception of the anatomy of the parts, and the most precise concert of action of mind, eye, and hand. The honeyed utterance of Civiale — *doucement et lentement*, gently and slowly—in the performance of catheterism, whenever borne in mind, has often served to prevent serious injury, which rough manipulation and precipitate action so frequently inflict upon the urethral canal. Catheterism for urethral or urethro-vesical exploration, as well as for dilatation and evacuation, is ordinarily performed during dorsal decubitus of the patient, because the standing posture favors syncope, and because recumbency of the patient is much more con-

venient to the operator, seated, as he is, by the sufferer's left side for urethral and by his right for vesical exploration.

Urethral exploration for the detection of a foreign body or of a suspected calculus impacted in the canal is made with a metallic instrument, serving at the same time for the extraction of either; the most commonly used being the slender alligator-jawed forceps, and the urethral lithotrite (of which there are several kinds) in the case of a calculus too large to be removed in its entirety. In the case of oblong foreign bodies in the bladder the explorer should also be the extractor. The writer once removed entire a cylindrically fashioned piece of raw potato nearly four inches long, which the patient had introduced into his urethra, and which was swallowed by the bladder. The extraction was accomplished by means of a rectangular metallic catheter with forceps extremity. Lithotrites generally answer the purpose of searching for and removing pieces of soft catheters from the bladder, while special tools are employed in the extraction of parts of metallic catheters and other hard, oblong, or cylindrical objects.

Urethral exploration of the prostate is made with the writer's cysto-pylometer or with Mercier's rectangular solid sound, which will do also for exploration of the bladder walls; while the detection of stone may be achieved with Mercier's rectangular hollow searcher or with Langlebert's lithophone.

Exploration of the urethra for stricture is best made with the soft, flexible, acorn-tipped web bougie, the penis being held between the middle and ring fingers, palm up, while the thumb and index retract the prepuce and part the lips of the meatus. A previously lubricated bougie, whose acorn-shaped tip is as large as the urethral orifice will admit without being overstretched, is then slowly inserted and gently pushed onward until it reaches an impediment.

The length of the bougie being known, measurement of the distal or extra-urethral part from the meatus will give approximately the situation of the stricture. For practical purposes it is essential only to know if the stricture be in the phallic, scrotal, or perineal region of the urethra. A smaller bougie, which just passes the stricture, indicates its calibre, and, by leaving it in that position for a few seconds and slowly extracting it until the base of the acorn reaches the vesical end of the obstruction, the length of the stricture is easily ascertained by proper mensuration of the shaft of the instrument that is out of the canal. A second or a third stricture may be diagnosticated by means of this or perhaps of smaller acorn-tipped bougies. Metallic bulbous bougies can not be used with the same delicacy and precision as the soft instruments, and their rigidity is often a source of no little danger.

34. Dilating catheterism, whose purpose is the restoration of the urethra's normal calibre, is ordinarily effected, in the case of narrow strictures free from complications, by the momentary insertion of flexible web bougies every second or third day, increasing the sizes until No. 10 or 12 of the English scale shall have been reached. After this, conical steel sounds may be used, not oftener, however, than once a week, and seldom exceeding No. 15, English scale. Those patients who live far away from the reach of their surgeon should not be intrusted to pass steel sounds, as they are not likely to acquire the needed skill, and are almost certain to do serious mischief to their urethræ. They should therefore be taught the use of very soft, olive-tipped web bougies not larger in the shaft than No. 13.

To refrain from making a false route or otherwise injuring the parts during the passage of a metallic sound or catheter in the urethra, the incurvations of this canal should be kept constantly in mind, the first point of danger being at the peno-scrotal and the second at the bulbo-mem-

branous junction; and to guard against these disastrous accidents the operator should direct the extremity of the sound or catheter downward toward the perinæum (after the manner of the ancient *tour de maître*), so as to prevent impingement at the first-named point of danger. Having passed this point, he makes with the handle of the sound a slow and deliberate sweep upward and to the left, which brings its extremity into the proper position; then very slowly depressing the handle between the patient's thighs at the same moment that the end of the sound is tilted up as it arrives at the second point of danger—*i. e.*, the bulbo-membranous junction—it slips easily into the bladder.

The catheterism of narrow, eccentric, tortuous urethral strictures, especially those complicated by false routes and distressing retention of urine, is one of the most delicate, difficult, and often perplexing of surgical procedures, requiring for its safe and successful execution mature experience, skill of the highest order, slow and gentle manipulation, imperturbable coolness, exhaustless patience, and unrelaxing persistence. The first step in this kind of catheterism is to lubricate the urethra by filling it with warm olive oil or with petrolatum; the next is to pass an elbowed capillary whalebone bougie with which to explore the region of the stricture until its lumen is found, when the bougie will enter the narrowed canal; but even after it has passed this point its extremity often glides into the mouth of an enlarged lacuna or of one of the ejaculatory ducts, from which it must be disengaged, slightly rotated, and pushed onward, when at length it will reach the bladder. This process sometimes occupies half an hour or even longer. Dilatation may then be made with a small tunneled conical steel sound (the whalebone bougie being the conductor for the sound), as described by the writer in earlier papers. The success of these steps generally insures the good effects of subsequent dilating catheterism, and is

almost always prophylactic of cutting operations. When it happens that dilatation can not be carried beyond No. 2 or 3, then a catheter No. 2 or 3 is introduced and retained twenty-four or even forty-eight hours, during which time the urine constantly trickles away, to the relief of the bladder, and this "continuous dilatation" facilitates the passage of larger bougies, so that in a few days dilating catheterism in higher numbers is performed with comparative ease. The foregoing is assuredly the most optimistic view of catheterism in difficult cases. How often this catheterism is disappointing and unsuccessful, particularly when a false route is to be eluded, those who have had much experience will testify. The operators who "always succeed" are to be congratulated if they always succeed! When, after repeated patient trials by an expert, the bladder can not be entered, the only resort is, of course, external perineal division of the stricture after capillary hypogastric puncture of the bladder and aspiration of the urine to afford temporary relief of the distended bladder in case of great urgency.

Unduly frequent and excessive dilating catheterism is undesirable, injudicious, irrational, and harmful. The consequent bruising of the mucous membrane excites a subacute urethritis whose exudate in the underlying connective tissue undergoes sclerous degeneration, ending in loss of suppleness and permanent contracture of the whole canal.

35. Evacuating catheterism is used to rid the bladder of calculous detritus after lithotripsy; to aspirate clots of blood or slimy urine from the bladder; to relieve retention of urine due to urethral stricture or to prostatic obstruction, and to draw off urine daily in cases of its stagnation from urethro-vesical or urethral impediment.

For aspiration of calculous detritus after lithotripsy and of blood clots from profuse cysthæmorrhagia, as well as excessively thick, purulent, slimy urine, the large metallic

catheters adapted to Bigelow's apparatus answer the purpose admirably. In their introduction the same care and deliberation should be observed as in the passage of other metallic catheters.

In urethro-vesical catheterism for retention of urine due to a stricture, it is generally necessary to begin by dilating the stricture rapidly, even to the extent of its divulsion, until a No. 4 or 5 tunneled sound, with the aid of its whalebone conductor, can be introduced; then to substitute a tunneled metallic catheter of the same size. When, however, it is possible to carry dilatation to higher numbers, say 9 or 10, then a No. 8 web catheter is inserted and some of the urine allowed to escape slowly. Under no circumstances should a distended bladder be emptied precipitately, for reasons that are too well known to require rehearsal. The same and even greater precautions are to be taken in the case of urinary retention due to prostatic obstruction. Physicians have often asked, What is the best catheter for such cases? The answer to the query has invariably been that any one catheter can not answer in all cases. They should be provided with catheters for the different forms of obstruction. For example, in ordinary cases of supramontanal enlargement of the prostate, the curved silk-web catheter is sufficient, and also the "velvet-eyed" India-rubber catheter; but in cases of intra-urethral prostatic growths, of unilateral enlargement, of unequal enlargement of both lobes, and of urethro-vesical barriers, Mercier's elbowed catheter is required, and sometimes the crutched catheter; while in cases of enlargement of the superior isthmus with supramontanal increase, causing great depression of the prostatic sinus, Mercier's double-elbowed catheter is the most useful.

36. Respecting the size of the catheters, the question, Should they be small or large? is very commonly asked. The answer is that they should be neither large nor small,

but adapted to the particular urethra to be catheterized. A catheter of full size for a urethra under the average is too small for a urethra of extraordinary large calibre. A No. 14 (English) is small for the latter, and entirely too large for the former, to which a No. 7 (English) is likely to be much more suitable. These, however, are extreme cases. The most convenient size to the physician and to the patient, one that strikes a fair average, is No. 9 (English). It is rare to find urethræ that will not admit a No. 9, particularly in cases of stagnation of urine from prostatic obstruction, stricture being excluded. Many patients who are obliged to catheterize themselves labor under the delusion that small catheters are safest and give least pain. To the use of small catheters may be ascribed the majority of prostatic false routes and the frequent attacks of urethritis and orchitis from which auto-catheterists suffer. The best-sized and safest catheter for each individual is the catheter that moderately fills and therefore does not stretch the urethra. Such an instrument gives less pain than the too large or the too small catheter.

37. The India-rubber "velvet-eyed" catheter is ordinarily the safest for general use by the inexperienced and for auto-catheterism, but its long-continued use upon or by the same patient is not advisable. The security felt by the patient is often a source of danger, for he is soon heedless of the precautions advised by the physician and suffers much in consequence. How much more frequently the physician is called upon to remove from the bladder fragments of or entire India-rubber catheters than of other firmer instruments! But, aside from these accidents, the urethra is often greatly irritated by the rubber catheter, not on account of this material itself, but of the carelessness, boldness, and undue frequency of its use, which come of its easy introduction. Painstaking, prudent, and intelligent patients soon acquire sufficient skill in the use of any

of the several pliable catheters and learn to keep them in good order.

38. It frequently happens that the physician is called upon to relieve patients from retention of urine when ordinary catheterism is impossible by reason of false passages in the prostatic region. In such cases the common practice has been to make a suprapubic puncture with an ordinary trocar and insert a catheter or a silver tube, to be opened as often as necessary for urination. Thirty years ago capillary puncture with aspiration was introduced to the profession by Dieulafoy, and this novelty soon became the fashion. Many successful cases were reported, and capillary puncture with pneumatic aspiration was to be *the* operation in retention of urine. Although at first no reference was made to accidents, in a few years the vogue of the process was on the wane; now it is employed with more discrimination, and only to relieve extreme distention once or twice, and not ten, twenty, or thirty consecutive times in the same case. Capillary puncture with pneumatic aspiration is an excellent resource in medicine and surgery; it can not be too highly praised, but its abuse should be loudly decried.

39. No kind of puncture of the bladder ever can remove a false route, and capillary puncture is not so safe a process as was at first believed. The consequences of the escape of a few drops of urine in the prævesical connective tissue have been so disastrous in a number of cases as to deter cautious physicians from employing this method of relief except under circumstances of the greatest urgency; but there is an equally forcible objection to its general employment—to wit, a simple, safe, and efficient procedure has existed for the past fifty years. Why it has not been more frequently employed is not apparent, but it is nevertheless valuable. In the year 1850 Dr. Mercier published in the *Union médicale* an account of his invaginated catheter for use in cases of prostatic false routes. Descriptions and

drawings of the instruments have appeared in different books and periodicals, but little heed seems to have been otherwise taken of this precious device. It may be fairly stated that in ninety-five per cent. of cases of prostatic false routes the invaginated catheter can be successfully applied. The instrument as now made consists of two catheters—one metallic, the other non-metallic. The first or female part is a thin-walled No. 10 (English) silver catheter, eleven inches long, very slightly curved, and having in its concavity, about half an inch from the point, an oval eye five eighths of an inch in length and three sixteenths in breadth. From the vesical extremity of the eye is an inclined plane, which is lost in the floor of the opening at the distance of a quarter of an inch, serving to tilt up the point of the male part. This male part is a flexible but firm "gum" catheter (No. 7, English), eighteen inches long, fitting loosely in the lumen of the female part, and having a single eye an eighth of an inch from its point. The way to use the invaginated catheter is to introduce the male into the female part as far as the eye of the latter, then to pass the instrument as far as the obstacle and engage the point of the metallic part in the false route, and finally project the male part, which will override the false route thus blocked and enter the bladder. If no urine should flow, it would be owing to closure of the eye of the male part by a blood clot, which might be forced out by the injection of a little water through the male catheter. The female part can then be withdrawn and the male left in as long as may be required; this is the reason for the increased length of the male part.

40. When a patient has long used the catheter for relief of his bladder, and the urethra has suffered from the consequent irritation followed by urethritis with spasmodic contracture, which renders catheterism painful and difficult, it becomes necessary for the surgeon to irrigate the

canal at least once each day, and to dilate it with steel sounds every three or four days for two or three weeks, when daily evacuating catheterism is again easy. This process should be repeated every three months or thereabout. An evil which should be avoided is the too frequent use of the evacuating catheter by the patient, who, if not cautioned, passes the instrument every hour or two if he happen to suffer much from vesical spasm. This may be obviated by the administration of the one two-hundredth of a grain of hyoscyamine three, or at most four, times daily, but for not more than four days, as the drug can not generally be tolerated longer, and its use should not be resumed until three or four days thereafter. The effect of the hyoscyamine is to abolish vesical spasm in the majority of cases. It is rarely necessary for the well-trained patient to catheterize himself more than six times in the twenty-four hours in case of prostatic obstruction to spontaneous urination.

41. The frequent evacuative catheterism necessitated by prostatic obstruction causes a subacute urethritis, which demands daily irrigation of the urethra, whose mucous membrane sometimes becomes so œdematous as to render catheterism difficult and even dangerous. In such cases, the careful introduction of flexible web bougies, or of steel sounds, of increasing size to No. 15 (English), every second or third day for two or three weeks, relieves the sodden mucous membrane, restores the suppleness of the canal, and facilitates the evacuative catheterism. Another ill effect of this indispensably frequent catheterism is acute orchitis, due generally to the use of unclean and fissured instruments. This occurs, in some patients, as often as every three or four months, first on one side, then on the other, seldom on both sides at the same time. After several attacks, the orchitis becomes chronic, and sometimes small purulent foci are formed in the substance of the testes.

These abscesses generally open spontaneously and are rarely incised, the patients objecting until they are taught by experience that early incision is wise and proper. Finally, the spermatic canals are occluded, and the genetic function is at an end.

42. In catheterism for vesical irrigation and dilatation, rigid, especially metallic, catheters should not be employed. The best and safest are those that easily enter the bladder without causing undue irritation, such as the several forms of web catheters, and the India-rubber catheter without eye, but open at the well-rounded, smooth vesical end. The double-current catheter should be abolished, if only for the reason that it does not accomplish the desired object of allowing enough of the injected material to accumulate for proper irrigation and for even slightly distending the viscus, since the stream enters through one eye of the instrument and immediately passes out of the other, and not more than a square inch of the mucous membrane is affected by the fluid. Should it be said that the outlet can be closed for a moment to regulate distention, the reply would be that this closure converts it into a single-current catheter, by which irrigation and distention are attained. Why not, then, use the single-current catheter, which is simpler, less bulky, and not so costly? The double-current catheter is, to say the least, an unnecessary tool. The substance injected is, of course, that which is indicated for the morbid state to be treated. The injector may be the fountain or the pear-shaped India-rubber bag. Irrigations for cleansing the bladder may be made by the patient with the aid of the fountain syringe, but when needed for gradual dilatation of the contractured bladder these irrigations should be made by the surgeon, who will generally find the India-rubber pear the better instrument, for with it he can, by pressure with the hand, quickly determine the degree of justifiable dilatation.

ESOPHAGEAL STENOSIS WITH SURGICAL TREATMENT—MORBID GROWTH OF TEXTURE—GENERAL PATHOLOGY AND TREATMENT OF ESOPHAGEAL STENOSIS.

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The line which separates health from disease is not always to be determined when certain tissues or organs have increased in size, or have undergone structural changes disproportioned to the rest of the body. The exclusive study of morbid growths, according as they affect internal or external parts, has led to limited views of the subject. Exercise within certain limits may cause the size of particular parts to be relatively increased, as the arms of the prize fighter or the legs of a circus performer. In these cases, however, such enlargement is consistent with health. We recognize that the departure from the normal type is absolutely necessary for the purpose it is required to carry out; and when this is accomplished, it returns to the natural condition.

In like manner other hollow viscera enlarge when they have an obstruction to overcome. No tissue or organ of the body is exempt from more or less increase in extent or magnitude, and there are none consequently, which may not occasionally present morbid or excessive growth. Increased growth of tissues may assume various forms. The organ or structure may gradually enlarge in whole or in part, still maintaining more or less of its original texture, shape and function, constituting hypertrophy. Membranes may become preternaturally thickened, causing more or less induration, whereby the movements of the parts may

be affected, or the calibre of tubes and ducts diminished, producing stricture. The results of the healing process may give rise to new tissues, exactly resembling those previously existing in other parts of the body, as in cicatrices, callus, etc., such growth may assume the form of a tumor.

Narrowings are the most frequent and clinically the most important of the affections of the esophagus. Under the head of stricture belong all those stenoses which are caused by such a change in the wall of the esophagus as to entirely destroy or greatly limit its power of distention. Here the stiffness of the wall during the act of deglutition has an effect as if an unyielding band surrounded it, and so in this wise is practically a stricture, whether any contraction occur or not. Changes of this nature may be either contracting, cicatrices or cancerous degeneration, and the consecutive muscular hypertrophy which may accompany stenosis arising from any cause whatever. Strictures pure and simple are best represented by the cicatricial stricture, *i. e.*, those which remain after healing of a loss of substance or solution of continuity arising from any cause, when the cicatrix has undergone contraction.

Relatively the most frequent and also the most severe are those strictures which sometimes remain after the destructive action of corrosive substances, such as the concentrated mineral acids, particularly sulphuric acid and caustic alkalies. And yet, since these substances usually cause death, even strictures from this cause are very rare, and these vary in character according to the depth to which the loss of substance has extended. If the muscular layer is partially or totally destroyed, we shall then have a dense callous, cicatricial tissue, the contraction of which produces the most obstinate strictures, (callous stricture). Even when the muscular layer is preserved, the quickly developed hypertrophy serves greatly to increase the stiffness of the wall, to make it unyielding, and so increase the stenosis.

With the exception of the pharynx (behind the cricoid cartilage) these strictures, according to the best of authority, occur most frequently in the vicinity of the cardiac orifice, or even in the muscles which guard that opening.

The signs and symptoms, therefore, manifested with any deviation from the normal standard peculiar to each individual at once suggest an abnormal change, which may point to both organic as well as functional, but not strictly so.

Since I have limited my paper to organic, cicatricial stricture of the esophagus, and purely to cases which came under my medical observation, I shall not dwell upon the neurotic form, excepting from a diagnostic standpoint. Only one case in all has been reported by Dr. Wilks as a supposed congenital stricture of the esophagus (Guy's Hospital Report, 1871-72, Vol. 17). The hysterical esophageal stenosis is purely of neurotic nature, and is differentiated from the organic form without difficulty.

Now in order to demonstrate the most common seat of an esophageal stenosis and the accompanying symptoms a brief description of the topography appears to be inevitable. The esophagus is a hollow musculo-membranous canal, about nine inches long, joining the pharynx above and the cardiac end of the stomach below. It commences at the lower border of the cricoid cartilage, passing through the esophageal opening of the diaphragm, to terminate at the cardia, opposite the ninth dorsal vertebra; in the neck it lies between the trachea and the spinal column and longus colli muscles, at the lower part inclining to the left, having on either side the common carotid artery, with the lateral lobes of the thyroid gland; the recurrent laryngeal nerves ascend between it and the trachea.

A very important point to be remembered is that the esophagus belongs to both the respiratory and the digestive tracts, although it is commonly described as a part of the

latter; its upper portion is exclusively connected with the act of respiration, while the lower region participates in both functions.

Cicatricial stricture of the esophagus may result from any disease or injury in which ulceration is followed by healing. The most common cause of such contractions is probably to be found in the swallowing of weak alkaline solutions. Leroux, of Paris, mentions a case in which the stricture was caused by the swallowing of a very hot liquid containing a piece of leek. A very interesting case was reported by Dr. Kendall Franks, in the "*Medical Press and Circular* of London," a number of years ago, in which the stricture was produced by a hard piece of bread crust; when the patient, who was a young lady of about twenty years of age, was first seen the condition had existed for over four years and a half; there was no evidence of hysteria; and Dr. Franks was of the opinion that it was due to cicatricial thickening, where the parts were injured by the ragged edge of the bread crust at the time of the accident. Stricture also very frequently results from the inflammation following mechanical irritation; or scalds received in swallowing hot fluids or hot solid food; or caustic substances.

The most common seat of this form of stricture is at the upper part of the esophagus, this being the narrowest portion of the tube in its normal condition; or it may form at the lowest portion of the pharynx, just behind the cricoid cartilage; these are the areas most accessible to mechanical injury, burns and scalds. Occasionally the stricture is the result of acute or chronic inflammation of a spontaneous origin. It may also be produced after the existence of some of the infectious fevers such as variola, diphtheria, etc. The stricture is not infrequently due to disease involving the submucous connective tissue, sometimes even the muscular portion of the tube. In cases which are not cancer-

ous the diminution of the calibre of the tube is usually due to submucous fibrinous deposit and subsequent organization, thus causing thickening or contraction of the mucous membrane. Stricture of the esophagus is occasionally congenital as before mentioned, and under such circumstances would be necessarily fatal. Sometimes the immediate cause of the stricture is unknown, and it is therefore ascribed to a neurotic origin.

Another variety of Esophageal Stricture is due to varicose veins. Dr. Janeway reports a case to the Practitioner's Society of a man of fifty years of age, who had several attacks of haematomesis and also hemorrhage from the bowels. It was supposed that he had an ulcer of the stomach. Death from exhaustion and sepsis at the end of two weeks, and at the autopsy varicose veins as large as a man's finger were found in the esophagus, extending four inches above cardiac orifice of stomach. An opening into one of these veins large enough to admit a number ten sound was found, and it contained a septic clot. Stomach normal, no cirrhosis of liver. There were twelve cases at the time of this autopsy.

The characteristic symptom of cicatricial stricture of the esophagus is dysphagia; it varies in degree according to the narrowing of the canal. Sometimes the actual constriction may be slight, however deglutition is rendered difficult or impossible by superinduced spasm. When the contraction results from the swallowing of a weak caustic or irritant solution, there is generally at the primary stage an acute inflammatory period during which there is painful deglutition. These symptoms persist as long as the ulceration continues, but when the ulcer heals, the patient can usually swallow with ease and for some time may consider himself cured. At the end of a few months, however, owing to the increasing contraction of the tissues forming a cicatrix, difficulty in swallowing is again experienced.

From that period the dysphagia grows steadily worse; and if not relieved, is most likely to prove fatal.

As to diagnosis; the location of the stricture may be determined by the passage of a bougie or by auscultation. On placing your ear or stethoscope over the course of the esophagus posteriorly it will be noticed that fluids pass at the ordinary rate and give rise to the normal sound, till they reach the upper part of the stricture, when the fluid is partially arrested, and a gurgling or tinkling noise is heard below the point of obstruction. The latter may be observed to continue for four or five minutes after a mouthful of fluid has been swallowed. In introducing the bougie, the instrument is either arrested at the point of obstruction or is passed beyond it with difficulty; sometimes a second stricture may be found lower down; a number of cases have been reported where even three strictures were present. The surgeon must know the topography of the esophagus, as he is required in a large number of cases to dilate the canal by a bougie when it becomes of importance to know exactly the direction of the esophagus.

In cases of malignant disease of the esophagus where its tissues have become softened from infiltration of the morbid deposit, the greatest care is requisite in directing the bougie through the strictured part, as a false passage may easily be made, and the instrument may pass into the mediastinum, or into one or the other pleural cavity or even into the pericardium. The surgeon should also bear in mind that permanent contraction of the esophagus and consequent symptoms of stricture are occasionally produced by an aneurism of some part of the aorta pressing upon the tube. In such cases the passage of a bougie could only hasten the fatal issue. Inflammation of that portion of the pharynx which cannot be seen when the tongue is depressed is rare. It is quite certain to exist if there be pain and an impediment in the act of swallowing when the food

arrives at that point opposite the superior and posterior border of the larynx; while the respiration remains free and the voice not affected.

The esophagus is not very often the seat of disease; we sometimes meet with acute inflammation of the division of the alimentary canal, produced by the swallowing of boiling water or corrosive poisons, especially Nitric, Sulphuric and Muriatic Acids or strong alkaline solutions such as ammonia. There is very little trouble in diagnosing a cicatricial stricture of the esophagus; the patient will complain of more or less difficulty of deglutition, which in severe cases amounts to complete inability to swallow. This is sometimes attended by spasm, regurgitation of food, oppression of the respiratory organs, pain in the parts, and more or less nervous distress. There will be more or less general ill-health from insufficient nourishment, and often-times more or less severe pain in the region of the sternum, stomach or cervical vertibrae is complained of. The diagnosis is confirmed or disproved by the passage into the stomach of gum elastic bougies, or esophageal probes consisting of olive-shaped masses of gutta-percha, ivory or steel, and affixed to stout whalebone or steel rods, as for instance:

Commencing with one of the smallest bulbs, the instrument is carried through the stricture, if possible. The length of the constriction is judged of by the distance along which the resistance to the passage is felt, and the size of the largest bulb which can be employed. Its consistence is judged by the amount of resistance offered to the passage of the exploring instrument. The instrument after passing through a stricture should always be carried into the stomach, in order to ascertain whether there be any more strictures. It is necessary that great care be taken in the passage of these instruments, on account of the probable existence of a pouched condition of the adjacent parts immediately below the seat of the stricture, into which the

instrument may glide, (an experience I have often had) and through which it may be thrust by the employment of undue force. In case the stricture is quite small and pouched at its side, a conical wax bougie with the tip bent forward is more likely to pass than a straight bougie, which is apt to be caught in the sac.

The symptoms of acute esophagitis are usually confounded with those of inflammation of the pharynx or of the stomach. We may be quite sure of its presence if difficulty and pain in deglutition exists for which nothing in the throat can be found to account, and if these symptoms be associated with a hiccough and a burning sensation between the shoulders and in the course of the tube. Stricture is beyond doubt the most common of the chronic diseases of the esophagus. The narrowing may take place at any part of its length.

The disease manifests itself by a difficulty in swallowing, even liquid food not passing without great distress; and if the stricture goes on increasing, the death of the patient by starvation is assured. Together with the obstruction, we may have very severe pain complained of and occuring at a particular part of the tube; also raising clots of blood without cough or vomiting. The matter ejected in the attempts at deglutition consists of masticated food, together with some mucus. If on the introduction of a small bougie, resistance is met with, and dysphagia is present, there is nothing more certain than that an organic stricture exists. The narrowing may be simply spasmodic, yet give rise to all the symptoms of an organic constriction; but as I have remarked, they are not permanent; at times nourishment is readily swallowed, and a full sized bougie passes the constriction with the greatest ease.

This singular disorder is occasionally sufficient to be accompanied by ulceration of the larynx; this is chiefly met with in hypochondriacs and hysterical women. In traum-

atic cases, the diagnosis presents little difficulty; the history of the swallowing of a caustic or irritant solution, or of any form of trauma produced by mechanical irritation at once removes all doubt. Only in very rare instances where the temporary lodgment of a foreign body, or the fact of an irritant having been swallowed and forgotten, or when an insane person is the subject of the stricture can any doubt arise. Under all circumstances it will be necessary first to determine whether the dysphagia be due to *stricture* or compression of the esophagus; and secondly, in the event of the affection being intra-esophageal, to eliminate the various other diseases of that portion of the canal.

In cases of compression, the difficulty of swallowing, though considerable, is seldom so marked as in cicatricial stricture, except in certain rare instances of excessive fibrous or cancerous enlargements of the thyroid gland or of a tumor in the posterior mediastinum. In aneurism of the aorta and enlargements of the cervical or bronchial glands, as well as in peri-esophageal abscess, the difficulty in swallowing is seldom so constant or severe. The only diseases of the esophagus which require to be differentiated from cicatricial contraction are cancer and simple stenosis. Cancer may be diagnosed by its occurrence in persons over forty years of age and by its progressive character. The special characteristic of true cicatricial stricture on the other hand is the peculiar nature of the dysphagia, that is to say, its primary occurrence, its disappearance, and its subsequent return in a more severe and intractable form. In cases of *simple stenosis* there is a history of difficulty of swallowing from an early period of life, and the symptoms are not progressive. Where the cicatricial stricture results from the healing of an ulcer caused by disease, a clear history of the previous existence of the complaint is in itself enough to establish the diagnosis.

Pathology: Cicatricial stricture is most often found at the junction of the inferior end of the pharynx, or near the cardia; this may be explained by the fact that both locations are controlled by entrance orifices, the upper one by striped muscular fibres and the inferior by the circular fibres forming the orifice of the cardiac end of the stomach. It may occur anywhere in the tube; a point at a level with the diaphragm being a favorite intermediate position. The single form is most common; but it may be multiple. It may be longitudinal or annular; and may involve the entire length of the esophagus. The traumatic form of esophageal stenosis nearly always assumes quite extensive dimensions, two to three inches of that organ; it may involve its entire length, and in exceptional cases the entire organ represents a fibrous cord. The walls of the esophagus are invariably indurated, because of the existing chronic inflammation, and organization of new fibrous tissue by the proliferation of the connective tissue cells and leucocites, thus the lumen of the canal is narrowed according to the degree of thickening or contraction. The mucous membrane undergoes considerable change in appearance; it becomes greatly infiltrated and is covered with a tenacious matter consisting of decomposed epithelium and mucus; sometimes long vertical folds are met with; also transverse bands are formed. As a rule cicatricial stricture, particularly the circular form, is accompanied by dilatation above the seat of the lesion.

Prognosis: It may be laid down as a general rule that cicatricial stricture is always attended with considerable danger, and not only is it often exceedingly difficult to effect a dilatation, but even in cases where some degree of expansion has been produced, subsequent recontraction is likely to take place, unless the use of bougies is regularly persevered in for a reasonable length of time. Many instances of cure have been reported. Kellar reports thirty-

five cases of which twenty-three were cured, seven benefited, five died; but many of these cases were rather due to inflammatory thickening or induration, than to actual cicatrization. Wolzendorf reports seventy-five cases, twenty of which proved fatal.

Treatment: The treatment of stricture of the esophagus resolves itself into (1) attention to the general health, and (2) mechanical or operative measures for the removal of the constriction. A case of stricture usually requires very protracted treatment varying from six to eight months on the average, and sometimes longer. Marshall Hall, the celebrated English physiologist, fell in this slow way a victim to a stricture of the esophagus, with ulceration of a dilated sac of the pharynx and the esophagus above the seat of the stricture.

Rectal and endermic feeding should be practiced to their limit. Pain should be relieved by hypodermic injections of Morphia. The medical treatment of this condition as claimed by great authorities, such as Gross, Pancoast, Sir Morrell Mackenzie, Charles Bell, Cumin, Dewer, Kellar, Wolf, Bayle, Kendall, Franks, Keen and many others, is of little use; but from statistics Surgery claims many cures. More often, however, all that can be done is to prolong life. The most practical mechanical measures are surgical attempts to provide an artificial opening through which food may enter the stomach. Of the number of methods that have been used to combat, the local condition are, (1). Gentle Dilatation. (2) Forcible Dilatation. (3) Internal Esophagotomy. (4) External Esophagotomy. (5) Esophagostomy. (6) Gastrostomy.

Of the first method—Gentle Dilatation—by which a large number of cures have been reported, it is obvious that its success is greatest where the disease is slight and recent, and more especially in those cases which, though originating in the same way as true cicatricial stricture, and

scarcely to be distinguished therefrom in their clinical history, strictly belong to the class of simple indurations. Dilatation is best effected by passing bougies of gradually increasing diameter every two or three days until the full calibre is reached.

Before passing the bougie—(and just at this point I may say I am simply showing the methods of procedure of the most eminent men of the day in the medical profession)—it should be dipped into hot water, and allowed to cool to the temperature of the body; then dipped in glycerine; olive oil is very disagreeable to some patients. Some recommend a gum-elastic bougie slightly bent at about an inch from its extremity, so that when it is introduced into the throat the point of the bougie presses slightly by its own elasticity against the posterior wall of the pharynx and is thus not likely to enter the larynx.

The patient should sit with his neck stretched out and his head thrown slightly back, while the operator standing in front depresses the tongue with the forefinger of the left hand, inserts the instrument in a slanting direction against the middle of the posterior wall of the pharynx at the lowest part. In introducing the bougie, about four inches of its length should extend beyond the hand, and it should be pushed slow—gently down the throat. When the instrument has entered the esophagus, if the patient will bend the head a little forward and swallow, he will aid the operator materially; should any obstruction be encountered, the instrument should at once be withdrawn and again passed into the throat. If on the second attempt you meet with the same obstruction at the same point, and after using very gentle pressure and manipulation fail to pass it beyond the obstruction, it should be withdrawn and a bougie several sizes smaller introduced.

Should this bougie pass the point, it should be pushed steadily downward until it reaches the stomach, as a second

stricture sometimes exists, and even a third below the second. On withdrawing the bougie the distance from the patient's teeth to the terminal end of the bougie should always be measured. The distance from the incisor teeth to the superior end of the esophagus varies from 15 to 17 centimetres—or about $6\frac{1}{4}$ to $6\frac{3}{4}$ inches, and in estimating the situation of an obstruction this length must be deducted from the length of the bougie passed into the body. As the passage of the bougie often provokes coughing and a considerable flow of saliva and mucus, the patient should bend forward in order that it may fall into a hand basin. The bougie should be, if possible, left in a position on the first occasion for at least five minutes, and as he gets accustomed to its presence he may be able to keep it there for ten or fifteen minutes or even longer. As I have said before it is not advisable to repeat the operation oftener than two or three times a week. The same size bougie should be passed on at least two occasions and it is generally better to use it three or four times before a larger size is employed. Some surgeons, after withdrawing a bougie, immediately try to pass a larger size, under the impression that an instrument of greater size can by this means be more easily made to traverse the stricture. On the contrary, the first bougie causes congestion, which renders it difficult to introduce a second larger size at the same sitting. (A fact I have often met with. Learned from experience.) I have been in the habit of using a whalebone bougie, but for fear of its breaking near the bulb and puncturing the wall, for the last year or more I have used a steel spiral bougie. I sometimes cover it with a thin elastic rubber tubing to prevent too great an irritation to the sensory nerves of the parts.

FORCIBLE DILATATION.

Another instrument used for the mechanical dilatation of stricture is a cylindrical metallic tube which, by an external arrangement, can be gradually widened after its introduction; this mode of treatment is very rarely to be resorted to.

INTERNAL ESOPHAGOTOMY.

This procedure is justifiable in cases of organic stricture which will not yield to careful and persistent efforts at dilatation. In performing this operation the Esophagotome of Prof. Sands should be preferred. It is introduced with the blade concealed, and when the portion of the instrument containing the knife is felt below the stricture, the blade is made to project and by a rapid upward movement of the instrument the obstructing band should be cut through. If necessary two or three incisions may be made. About five or six days after the operation a medium size bougie should be passed to counteract the shrinking tendency of the divided tissues, and instruments of gradually increasing size should be used from time to time. Of seventeen cases reported by one author, four died. From an examination of the results of the published cases of internal esophagotomy, it does not appear to be a very satisfactory operation. The actual danger attending the performance of the operation is far from trifling. The thinness of the esophageal walls and the close proximity of many of the blood vessels and nerves constitute dangers which cannot be ignored.

EXTERNAL ESOPHAGOTOMY.

In this operation the canal may be opened either at the seat of the stricture or below it. The incision, about four inches in length, is made on the left side of the neck on account of the inclination of the esophagus to that side, from the thyroid cartilage downwards, dividing the skin and

platysma. The opening made is between the larynx and trachea on the inside and the sheath of the vessels externally. The disadvantages are first owing to the depth from the surface at which the canal is situated, and the fact that when diseased it is often fixed to the surrounding parts; the operation is a very difficult one. There is great danger of cutting the large vessels and nerves of the neck, and the thyroid gland, which is not infrequently enlarged in esophageal stenosis. This operation is practiced not only on stricture, but for the removal of foreign bodies; when done for the purpose of making a fistulous opening for the introduction of food, the operation is known as Esophagotomy.

In the *New York Medical Journal* of 1894, Mayo reports a case of a child three years old laboring under a stricture of the esophagus. After the performance of a Gastrotomy the cardiac orifice of the stomach was sought with the little finger, but this caused so much gastric disturbance and leakage that it was determined to wait. A month later, esophagotomy was performed low down, a probe was passed by way of the stomach through the obstruction and out of the wound in the neck. A double strand of braided silk was fastened to the probe and drawn through the channel. Another strand of silk was used to cut the tissues by the ingenious method of Abbe of New York, while the second strand was used to keep the stricture tense. The stricture was cut and the opening greatly enlarged. During the succeeding month, at intervals of a few days, this process of division was carried on, and perforated shot clamped on the thread wire drawn through to aid dilatation; bougies were afterwards passed, and the fistula in the neck was allowed to cicatrize. Gross reports five cases of Esophagotomy, of which two survived the operation for five and seven months, respectively. As the only means of averting certain death, even for a time, it may, if undertaken

early, become a valuable addition to the resources already named.

Gastrostomy: This has proved to be the most practical of all the operations recommended for the relief of esophageal stricture, aside from dilatation. Gastrostomy was first performed by Sedillòt in 1849. The operation consists of making a permanent fistulous opening into the stomach for the purpose of habitually introducing food. In some cases food is taken into the mouth and masticated, then forced directly from the mouth through a tube into the stomach. There are three useful and reliable methods of gastrostomy: (1) Witzel's method. (2) the old method of Fenger, and (3) Franks' method. In performing this operation Witzel's method is considered by many of the leading authorities the best. This was first published in 1891. In this operation an opening is made into the abdomen so that the fistula extends through the rectus and transversalis muscles, the fibres of which run at right angles to each other, and may be expected to contract more efficiently than with the rectus alone.

In Franks' operation a cone of the stomach is brought up through what is called Fenger's incision and a bridge of the skin, to a point above the border of the ribs where it is fixed with sutures, and a small opening made, so as to allow a tube to be inserted. Two long, stout ligatures are passed through the portion of the stomach that projects through the wound for the purpose of facilitating the making of a subsequent incision into the stomach (which is done from three to eight days later, or after the first operation,) and also as a precaution against the tearing out of the stitches, if the patient vomits; and finally for the purpose of facilitating the return of the stomach into the abdominal cavity.

The Fenger's incision above spoken of is the one which has been employed most frequently; this incision is from three to four inches in length and is made to the left of the

rectus muscle or a line below and parallel to the left costal arch. The fistulous canal passes through the abdominal wall in a curved direction.

Case 1. About the middle of April, '96, I was called to see a Mrs. L., age 52, who consulted me on account of difficulty of deglutition. This symptom was first noticed by her about the 6th of Feby., of the same year, at which time she thought a bone had lodged low down in her throat while eating some meat; she felt quite a little inconvenience for two or three days, and then the feeling gradually passed away. Later she had spells of nausea and vomiting at intervals for about ten days. She was then comparatively free from the disagreeable sensation for about two weeks, when the vomiting and dsyphagia recommenced and grew gradually worse. On my visit, which was seven weeks after, up to which time she had been under another physician, I found she had been then two days without eating or drinking, and felt as she expressed it, she was "actually starving." After a thorough physical examination of my patient, and repeated vain attempts to pass the smallest size bulb bougie, I was rather inclined to give it up, when on another and last effort I succeeded in forcing it through the constriction. I recognized it as a stricture of the esophagus, and from the history concluded that it was of a fibrous or cicatricial nature and not malignant, although there was a history of cancer of other organs among relatives, but not in the immediate family. I have continued the use of the bougies at intervals of from three to six days; recently I have used them about once in two weeks; and I can now introduce the largest size bulb of this lot with very little difficulty. The location of the stricture is about 6½ inches (or 16.5 centimetres) from the teeth to the thickest part of the stricture, with a depth of 2 3-16 inches (or 5.5 centimetres) the narrowest point of the stricture being 6-8 to 7-8 of an inch.

Of the six other cases I have had within the past eighteen years but little history was obtainable. The second case was a young lady about 24 years of age, tailoress by trade. I saw her but two or three times, and as she objected to the use of the bougies, I was unable to help her. She died in the course of a few weeks from the time I last saw her.

The third case was in a man, a photographer. I treated him with bougies some little time, and with very good results. While under treatment he moved to Chicago and I lost track of him.

Case 4 was a wool sorter by trade. He attributes his condition to irritation caused by a tick which got into his throat. He improved greatly, but he left the city while under my treatment and I have heard nothing further of the case.

Case 5. A Mr. S., age 38, came to see me about nine years ago; he worked in a shoe factory. While working at his trade he was in the habit of holding tacks in his mouth; at one time he swallowed one and felt it scrape his throat as it went down, but thought no more of it until his present dysphagia. He complained of great difficulty in swallowing, more so sometimes than at others; on examination I found stricture of the esophagus. He improved under the use of the dilators, which were used regularly for ten months, and was able to take solid food in small quantities up to the time I last saw him, after which he moved to Philadelphia. How the case finally terminated I never learned.

Case 6 was a marble cutter, about 28 years of age. I saw him but once or twice, and never learned how his case terminated.

A case is reported where a man had a stricture which resulted from the sting of a wasp. He drank a glass of beer containing the insect and when it reached the esophagus he felt a sharp stinging pain; shortly afterwards he vomited

a portion of the beer together with the wasp. Another case is reported where a man was walking through a field with his mouth partly opened; a bee flew down his throat, stinging him quite badly in the esophagus; this was followed by an organic stricture.

AN EPIDEMIC OF INTERCOSTAL NEURALGIA.

By Thomas F. Reilly, M. D., of New York County.

Sporadic cases of intercostal neuralgia, with an accompanying herpes zoster, are of tolerably frequent occurrence and attract little attention. It was the good fortune of the writer to observe during the early part of the past summer a series of cases of a disease that was similar, in many respects, to the classical neuralgia, but differed in several important features. About the middle of June cases began to present themselves with the following history: After a few hours of general malaise and chilliness, a sense of uneasiness, and later of pain, manifested itself in the side, usually over the left hypochondriac region. This increased in severity, and within half an hour became almost unbearable. The pain was continuous, with frequent exacerbations. The sensation, as experienced by myself (having been one of the early sufferers), was such as one would expect if the spleen were swelling rapidly and pushing out the ribs, producing the pain characteristic of distention. The pulse was 100, respirations 24, and temperature 101°F. Every movement intensified the pain; deep inspiration or coughing rendered it excruciating. After two or three hours a profuse sweat appeared, and the pain began to diminish. Three or four hours later the pain had entirely vanished. However, the malaise, coated tongue, and gastric disturbances continued, while the temperature dropped to 99.5°. The next afternoon, or that of the following day, the paroxysm was repeated. On the second or third day an herpetic eruption appeared. Four paroxysms was the largest number observed in any case. For a period of a week or more following the last paroxysm there was a

sense of uneasiness, with an occasional pain in the affected region. This was usually more marked in the morning. From the beginning to the end of the disease perspiration was very profuse and more or less constant. It had about the same odor in all the cases. The prostration was very marked throughout. Most of the cases were not so severe as the foregoing, and toward the end of the series usually but a single paroxysm occurred. I observed fourteen such cases within a period of five weeks. Several of my confrères during the same period treated a similar number. These, together with many cases not severe enough to call for medical attention, justify me in classing it as an epidemic.

It has been customary to regard herpes zoster as a necessary accompaniment of this form of neuralgic pain, and the affection is usually described as zona or herpes zoster. In four of my cases an herpetic eruption appeared along the course of the intercostal nerves in the painful region. In eight cases the herpes appeared on the face or mucous membranes, and some of the severest cases were in this group. In two mild cases I did not observe the herpetic eruption. This is opposed to the view formerly held, that the herpetic eruption must needs appear over the nerve tract of the painful region. In more than half of the cases a pharyngitis appeared on the seventh day. Pruritus of the entire body occurred in five cases. In three cases a small papular eruption, general in distribution, made its appearance toward the end of the second week. In three cases the pain extended over the region of the seventh, eighth and ninth intercostal nerves on the *right* side, extending from the mid-axillary line forward. In three other cases it attacked both sides alternately, during the same paroxysm. Obstinate constipation was a marked feature in nearly all of the cases. Vomiting was prominent in four cases. All of the patients were in good health previous to

the attack. As far as I could ascertain there were no sequelae. The age of the patients varied from 12 to 65 years. There were 5 males and 9 females attacked.

Epidemics, similar in many respects to the foregoing, have been reported by Kaposi, Wetz and others, but a zoster always accompanied the cases reported. There is a wide divergence of opinion as to the nature of the disease. Much of this confusion in the past was due to the confounding of ordinary, simple neuralgia with this disease. That it is not a neuralgia, in the ordinary sense, is evident for the following reasons: In all cases of neuralgia examined at the Massachusetts General Hospital by Cabot leucocytosis was not found in a single instance. All of the cases examined in this series showed leucocytosis. In the second place, the presence of continued fever, gastro-intestinal disturbances, sweating and prostration are evidences of a general toxaemia. Again, in true intercostal neuralgia the so-called Vallieux points of tenderness can be demonstrated. In no case could I elicit this sign.

The trend of recent opinion is toward regarding it as a constitutional disorder, due to an acute infection. Kaposi in answer to the question, why does the pain localize itself along certain intercostal nerves in a general toxaemia, points out that in many general toxaems, such as coal gas and arsenical poisonings, these nerve tracts are similarly involved. Paul Gerne has pointed out that it corresponds in every particular to the acute exanthemata, since one attack generally confers immunity, and that the disease often occurs in epidemics lends color to this view. In passing, it may be mentioned that three of my cases occurred in one house and two in another. Hay has called attention to the general glandular enlargement in these cases. As a result of microscopical examination of a gland from such a case he has discovered a bacillus which he thinks may possibly be the cause of the disease. Kaposi states that epi-

demics occur in Vienna in the spring and fall, and thinks the outbreaks are influenced by atmospheric conditions. Wishing to ascertain if there was any connection between the atmospheric conditions and the present epidemic I wrote to Local Forecaster Emery of the U. S. Weather Bureau for the requisite data which he very kindly furnished. From a study of this material I find (1) that the mean temperature was slightly higher than was usual for the period from the middle of June to the middle of July. (2) The number of cloudy or partially cloudy days during the two months was 41. The average humidity 70, mean atmospheric pressure 30. Prevailing winds south and northwest. The velocity of the wind being a trifle higher than usual. Finally to use the words of the Forecaster, this period does not show any unusual meteorological conditions.

Since the above was written my attention has been called to an account in the September number of the *Münchener Wochenschrift* of an epidemic very much similar to the above that appeared in a small German city. More than an hundred cases were observed in the course of three months. The neuralgic pain affected various parts of the body, but was never accompanied by fever, and seldom was a zoster present. There was in addition marked disturbances in the general tract in many of the cases reported. It is thought that the disease was due to some infectious agent.

Winfield found the plasmodia malarial in 75% of his cases, and thinks that this is the usual cause of the disease. The paroxysmal nature of the affection is a point in favor of this view. In the blood of a few cases examined I failed to find the plasmodia, but, on the other hand, noticed a marked leucocytosis. Quinine seemed to have no effect, and a previous malarial history was rarely obtainable. Enlargement of the spleen was never present. The immunity from further attacks that is said to follow this disease is strong evidence against the malarial theory.

Treatment.—After the useless employment of quinine in massive doses I had recourse to salol and phenacetin, with an occasional dose of chlorodyne or morphine. Strapping the side with rubber plaster gave relief at once, and when the zoster was not present did more to shorten the disease than all other measures. A mustard plaster applied over the affected region during the paroxysm was also of some service.

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THE TREATMENT OF CICATRICIAL STRICTURES OF THE OESOPHAGUS BY RETROGRADE DILATATION.

By Henry Mann Silver, M. D., of New York County.

In the March, 1895, number of the *Annals of Surgery*, Dr. George Woolsey published an able and exhaustive article entitled "The Treatment of Cicatricial Strictures of the Oesophagus by Retrograde Dilatation." He reported eight recent cases, including one of his own published in his article for the first time. These, added to the twenty cases reported a few months before by Kendal Franks, make twenty-eight cases reported up to that date. This afternoon I take pleasure in reporting the following case: A. M., aged four, was admitted to the Surgical Ward of the New York Infirmary for Women and Children, Oct. 5, 1898. About a year before admission he drank some Javelle water, and, although taken immediately to a physician who washed out the fauces and stomach, suffered intense inflammation, the tongue being so swollen as to prevent closure of the mouth for three days. The child had been unable to take solid food since recovering from the immediate effects of accident. The quantity of liquid food retained had gradually decreased until at the time of admission he was nourished by rectal enemeta, only occasionally a small quantity of milk and water entered the stomach. No attempt to keep the oesophagus open was made before the child was admitted. On examination a No. 11 (French) bougie passed nine and three-quarter inches from the dental arch before it met the obstruction. No better result was met with the patient under chloroform. A careful fluoroscopic examination showed the flexible metal sound in the

oesophagus, reaching to the inferior angle of the scapula. An X-ray photograph was attempted, but on account of the increased movements of respiration caused by the presence of the sound proved a failure. Some plan of active treatment was demanded if the child's life was to be saved. No instruments could be passed into the stomach, moreover, the rectal enemata were unsatisfactory and did not yield sufficient nourishment to maintain life. It was decided to perform gastrostomy and nourish the child, at the same time to treat the stricture by retrograde dilatation. Accordingly on the 17th of October, with the able assistance of Dr. Gertrude B. Kelly, Visiting Surgeon, gastrostomy after Ssabanejew-Frank method was performed. The operation was quickly and easily done, patient reacted well, and wounds healed under one dressing. Tube feeding by fistula was begun the second day after the operation, the child taking six ounces of peptogenic milk every three hours. In a few days this quantity was increased to eight ounces. (Three times a day a mixture of one ounce of peptogenic milk and an ounce and a half of water was given by mouth. Occasionally a small quantity of this would be vomited.) On November 4th, seventeen days after the operation, patient was allowed out of bed. On the 18th of November, just a month after the operation, the child's condition having greatly improved, the long slender finger of the house surgeon, Dr. Lotta Wright Meyers, was passed through the fistula into the stomach, then into the cardiac orifice of the oesophagus without much difficulty. A bougie was then passed into the oesophagus from the mouth, but did not come in contact with the finger, as there seemed to be a point of definite resistance just above the cardia. An attempt was made to pass a probe along the finger into the stricture, but this could not be done on account of the tightness of the fistulous opening around the finger.

Dec. 8. An extra long Bank's filliform guide was passed from above into the stomach and drawn out through the fistula. To this was attached a silk thread, which was drawn up through the stomach and oesophagus out of the mouth and the ends tied together. On account of the difficulty of passing instruments along the finger through the fistulous opening, I requested Messrs. Tiemann & Co. to make three endoscopes, after the general model of Kelly's cystoscopes, of extra length and varying sizes with a groove in the obturator deep enough to allow the passage of large size braided silk. The endoscope easily passed through the fistula into the stomach, and without pain in spite of the oblique course of the fistula. Dr. Meyers generally passed her index finger into the stomach before the introduction of the instrument. The endoscope, threaded on the string as a guide, was easily pressed directly to the cardiac orifice, which was seen to be dome shaped, the silk thread passing out at apex of dome. A No. 9 (French) bougie was passed through the stricture by side of thread. Some milk and water drank while the tube was in position could, with the aid of an electric head light, be seen entering the stomach. Lange used this device to locate the cardial orifice in his case. The electric head light was a great aid in the introduction of the bougies. After this, retrograde dilatation was carried on through the endoscope, at intervals of four or five days until No. 17 passed with difficulty but a short distance into the oesophagus. Heavy white braided silk (No. 19) was substituted for the smaller size twisted silk. Thereafter whenever the stricture was put on stretch by the bougies, the silk thread was drawn up and down after the string saw method of Abbe and the bougie passed easily afterwards. Dilatation by mouth was begun in the latter part of January, 1899, and No. 9 passed easily, but No. 11 being a little stiffer, refused to enter the stomach, but was felt by the finger within the stomach to be in a

pouch behind the cardia. Since the bougies were passed by mouth, ice cream, strained oat meal and custard were added to the diet, the bowels being kept open by occasional doses of calomel and magnesium sulphate. Early in April it was noticed that after a two weeks' rest the instruments introduced by mouth passed more easily, No. 19 (English) passing readily. The patient's condition being so good, and large sized bougies passing by mouth so easily, it was decided to close the gastric fistula. This was done on the 18th of April, six months after the fistula was made. The stomach, having been washed out with warm boric acid solution through the fistula, was completely separated from the abdominal wall. The fistulous opening was now cut out and the edges of the wound closed with a continuous Leimbert suture of fine black silk, reinforced with a single row of Halstead's quilted sutures. The stomach was dropped into the peritoneal cavity, the peritoneum and abdominal wall closed with a continuous suture in the usual way. The wound healed by first intention without pain. On the third day, whiskey and ice was given by mouth, on the fourth, a small quantity of liquid peptonoids and water, and at the end of a week food was given freely. Bougies of increasing size up to No. 19 were passed every other day by Dr. Porter, the house surgeon, and on May 7th patient was discharged with the request that he return for treatment twice a week.

Before closing this history I must mention some interesting points that attracted attention during the treatment. First. The ease with which the metallic bougie could be traced with the fluoroscope from the mouth to the point of stricture. My only regret is that I did not study with the fluoroscope the relative position of instruments introduced from above and below.

Second. The remarkable run of low morning temperature, sometimes reaching 96°, which continued throughout. For

a period of ten days, soon after the first operation the temperature remained subnormal all the time, never going below 97°, or above 98°, except one day when it remained at 96°, pulse 80, resp. 24, the lower extremities being cold, but the hands warm. During this time the patient was receiving eight ounces of peptogenic milk through fistula every four hours, seemed well nourished, with all the functions carried on normally. Moullier speaks of a case where there was a persistently low early morning temperature and warns against the least exposure or the slightest exertion at such times.

Third. Leakage from fistula. During the six months the patient was under observation the gauze dressings were found wet about six times, three at end of the first month before any attempt at dilatation of the stricture, and the remainder just before the fistula was closed. During the time of active treatment with finger and endoscope there was no leakage, and at no time was there any reddening of the skin.

Fourth. The difficulty experienced in passing bougies of any stiffness into the stomach from above in the early stages of treatment, although the stricture was well dilated. The bougie would press the posterior wall backward, and its point could be felt behind the cardiac orifice by the finger in the stomach. This was due, without doubt, to the pouching of the lower part of the oesophagus.

Fifth. The wonderful change produced in the tightness of the stricture and size of the pouch by a long period of absolute rest from mouth feeding and instrumentation. Retrograde dilatation was easier, and the difficulty mentioned above of passing stiff instruments disappeared, the pouch having contracted.

Sixth. The remarkable appearance of the dome of the stomach at the second operation. After it was separated from the integument, it was just as free from attachment

to surrounding tissue as on the day of the operation, six months before, nor had the peritoneal coat changed its appearance except that its lustre was less bright because of dryness. After the fistulous opening had been cut out, the edges were sutured first as if the peritoneal surfaces were fresh. They united perfectly as no ill effects followed.

After the experience of this interesting case, and a careful examination of the literature of the subject published during the past ten years, the question arises—What, in the light of modern surgery with its great improvement in technique, is the best method of treating non-malignant strictures of the oesophagus situated near the cardia? This can best be studied under the following heads: First. In locating the stricture. Second. In reaching the stricture. Third. In dilating the stricture. Fourth. After treatment.

First. In locating the stricture. A fluoroscopic examination of the back with the X-rays will just as easily locate the point of stricture by passing a metallic sound through the oesophagus, as it will locate the position of a metallic foreign body lodged in that tube. If an X-ray apparatus is not at hand a bulbous bougie will do almost as well, and remembering the result of Richardson's investigation, viz.: that the cardiac orifice is situated in the adult on the average of fifteen inches from the dental arch.

Second. Reaching the stricture. The great difficulty in the treatment of these cases is that the stricture is absolutely impassable, for in the majority of cases a small quantity of liquid nourishment can at times enter the stomach, but, that in most cases, it is impossible to cause the tip of the instrument (bougie), however small, to engage in the opening in order to carry on the dilatation. (Those who have had experience in urethral surgery, especially in past years, will remember the half hours or even hours of patient effort to pass a filliform guide through the stricture into the bladder, knowing that with a guide in the bladder

they are masters of the situation.) The cause of this difficulty is a pouching of the tube just above the stricture, with the point of exit situated anywhere in the lower part of the pouch. The picture changes when you look upon the cardiac orifice from within the stomach. On this side the walls of the stomach rise in the shape of a cone into which the finger can as a rule be thrust and the opening felt. To reach this dome-shaped space necessitates opening the stomach. Ball and Richardson have shown by their celebrated cases of foreign bodies in the oesophagus that we have nothing to fear from opening the abdomen in the median line and inserting the finger, or even the whole hand, into the stomach to explore the lower part of the oesophagus. In the treatment of these cases the question to be decided is—whether a temporary opening into the stomach (gastrotomy), or one that is to remain open a longer or shorter time (gastrostomy) be made. A very careful study of the case will, I think, aid in deciding the question. When a powerful corrosive has been swallowed, followed by signs of intense inflammation and rapidly forming strictures, or, when the amount of food regurgitated at one time shows that a pouch of considerable size has formed, the stricture being impassable to instruments, I think a gastrostomy most advisable. But where the inflammation has been moderate, and there is regurgitation of but a small quantity of fluid almost as soon as swallowed, although the strictures may be of long standing and impassable, a gastrotomy would be most advisable. Personally, in the treatment of cases hereafter I would fear pouching of the lower oesophagus more than a tight stricture in the same location. Before performing a gastrotomy for this purpose, a point for the incision in the abdominal wall should be selected that will give us free access to the cardia and will allow us to convert a gastrotomy into a gastrostomy, if necessary.

The old operation of Fenger and others with the accompanying dangers and distress of leakage are not to be thought of at the present day. Of the modern operations devised to prevent leakage, and which, at the same time, might be brought to our aid in retrograde dilatation where we wish to insert the finger or instruments in case it is necessary to complete the opening as a gastrostomy, those of Hahn and Witzel, while answering every purpose for malignant stricture, are entirely unsuitable for the treatment of fibrous strictures, the opening into the stomach being either too small or too indirect. The Ssabanejew-Frank operation answers all requirements perfectly, as was seen in my case. The principle upon which this operation depends to prevent leakage is the fixing of a dome-shaped portion of the stomach to the parital peritoneum, then carrying the apex of the dome out of a second incision about an inch and a half above the first, the dome-shaped portion lying between the two openings beneath the skin and soft tissues, or as Frank states, the fistulous canal passing the abdominal parietes in a curved direction underneath a stretched cutaneous bridge. The indirectness of the fistula and the cutaneous bridge would at once seem to be a great objection in the after treatment, but it was found that the finger could reach the cardiac orifice, and the endoscope could be introduced through the fistula as easily as if the opening had been direct. Nor were the purposes of the operation viz., to prevent leakage, interfered with by the dragging down of the upper opening; very rarely did leakage take place, and that most frequent occurred before any attempt at dilatation was made. Winslow in two cases found it perfectly feasible to practice retrograde dilation through a fistula made by this method. There are two objections to this operation: 1st, it is not suitable for cases in which the stomach is greatly contracted; 2nd, the fistulous opening is not quite so near the cardiac opening as that

of Van Hacker, but I found this of no objection in my case. Since this case was discharged from the hospital, I have been making a careful study of Kader's method of performing gastrostomy, comparing its advantages with those of the method used. In performing the Kader operation, an extra large rubber tube can be used, and, after passing the thread through the stricture as soon as the fistula is made, it can pass out beside the tube. When you wish to dilate the stricture the tube can be removed and you can draw the bougie up through the stricture, or the endoscope threaded over the silk and the bougies passed through the endoscope. After the dilation the rubber tube can be replaced until the next sitting. The great advantages of this method are that there will be absolutely no leakage, and no secondary operation will be needed to close the fistula, as it closes rapidly when the tube is withdrawn.

In Van Hacker's method the operator makes the fistula through the left rectus muscle, so as to secure a sphinctive action from the tonic contraction of the fibers around the extruded portion of the stomach wall. This is not of much service in children, for Meyer states "in children the rectus muscle is rather poorly developed." Then we would be in need of some device to prevent leakage. The special advantage of the Van Hacker method over that of Ssabanejew-Frank is that it can be used when the stomach is small or contracted. The incisions in the abdominal wall and stomach in both of these methods can be used either for gastrotomy or gastrostomy.

I have refrained from describing the operations mentioned, but would refer those interested to Dr. Willy Meyer's classical article entitled "Recent Methods of Gastrostomy for Strictures of the Oesophagus," published in the October, 1894, number of the *American Journal of the Medical Sciences.*

I think the interior of the stomach should always be examined with the finger before deciding on the completion of the operation as a gastrotomy or gastrostomy. The ease and safety of this examination will be aided by following Bull's advice to insert two loops of silk through the stomach two inches apart in a vertical line, and make an incision between them large enough to admit the index finger, two more loops of silk are passed through the edges of the wound in the stomach to control it thoroughly and to keep the edges of the opening in the stomach close against the finger. This advice would not be applicable if we were dealing with patients suffering from malignant stricture and greatly exhausted by disease and starvation, but the majority of patients suffering from cicatricial stricture are not in such a desperate condition. After the wound has been protected with flat sponges, the finger is introduced and carried directly backward till the vertebral column is felt, then upward till it enters the cardiac orifice. The examination should be carefully made in order to locate the orifice for the passage of instruments along the finger, or for the use of the endoscope.

3rd. Dilating the stricture. All those who have had experience with the treatment of these cases by retrograde dilatation know the invaluable aid of having a guiding thread passing through the stricture into the stomach. This thread may be used for the endoscope, for the passage of bougies, also to draw dilator bougies up through the stricture. As to the endoscope I found it, together with the electric head mirror, an invaluable aid. The instrument has been used by others. Maydl, in a case of cicatricial stricture in a boy 16, located the cardiac orifice with an endoscope after performing gastrostomy. Lange, in his case, made the cardiac orifice visible by means of a thin glass speculum with the largest size of urethral endoscope and the injection of milk from above. Weir, in writing of a

case of stricture of the oesophagus, speaks of the tube as follows: Had it become necessary, retrograde dilatation would have been tried by a slightly curved tube leading to the cardiac end of the stomach from the fistula as a guide, and through this the necessary bougies would have been passed. Soein, reported by Hagenbeck, has devised a method which may be of great assistance, viz: To have the patient swallow a small shot attached to the end of a silk thread, and then attempt to swallow a little water from time to time afterward; little by little the shot works its way through the stricture into the stomach, or the shot may be carried to or into the stricture by a hollow bougie open at both ends, the bougie being withdrawn. Kraske used a simple knot for the shot. In case this method fails an attempt should be made to pass a filliform guide first from above, failing in this, then from below; when successful a fine strand of silk is to be attached to the tip of this and withdrawn. To dilate the stricture several operators have used some form of dilating instrument with or without the thread. Loreta-forceps similar to Dupuytren's perineal cystotomy instrument, very distressing symptoms followed the use of this instrument; Franks and Winslow, Otis dilating urethrotomy without the knife; A. Dixon, Wylie's uterine dilator; Lindair and Andrews dilating forceps; Maydl attached a silk ligature to the initial cap of conical bougies of varying sizes and drew them through the stricture. Bernay perforated the olive points of bougies of varying sizes, stringing them on a cord, calling this his rosary bougie. Soldane drew knots of increasing size up through the stricture, these knots being made on a strong cord. Von Bergmann, used sponge tents; Soein, acting on the same principle, drew increasing sizes of violin strings into the stricture, thus gradually dilating it by their increase in size from absorption of moisture. Lange first divided the

stricture by drawing small knives through the stricture from below. Abbe combines the methods of dilating the stricture from below with bougies, then divides it, not with a knife, but with a string. He passes a thread of silk into the stomach, then engages the largest possible bougie in the stricture, and drawing the string up and down saws the edge of the stricture, the instrument passing through. A larger bougie is now used and so on until a bougie of a considerable size can be passed. Mayo has modified this method by introducing two threads, one he uses as a string saw while the stricture is dilated by knots placed on the other. He claims the knots on the second thread are equally good and easier of execution than passing bougies from below into the small opening. This method of Abbe divides only the stricture-tissue and is perfectly safe; in fact, it seems to be the ideal way of dividing cicatricial strictures of the oesophagus, and, when combined with Maydl's method of drawing conical bougies up, is the ideal method. Mayo, in speaking of the disadvantages of the string saw in his case, states that it cut the edges of the gastric fistula when drawn taut. This was in part obviated by holding the lower end of the cutting thread in the bite of a forceps held on a plane with the stricture from within the stomach. In my case the passage of the thread through the endoscope did away with this difficulty.

If the operation has been finished as a gastrostomy, dilatation can be aided by giving the oesophagus absolute rest from the passage of fluids or instruments for at least two weeks, all food being given by the fistula. Weir, Coombs, Samuels and others speak strongly on this point. Muscular spasm is allayed, inflammation if present, subsides, the products of inflammation are absorbed, and above all, contraction of the pouch takes place. Several cases are on record where after a long rest, liquid food could pass through the oesophagus, and the cases were cured by dilatation from

above. Van Norrden quotes such a case operated on by Mikleberg by Witzel's method. After sufficient retrograde dilatation to allow free use of bougies by mouth, the stomach should be completely detached from the abdominal wall, closed, dropped back in peritoneal. Distinct mention that this was done is made in eight of the thirty-eight cases. Cavity and the abdominal wall closed.

4th. The after treatment consists in the passage of the largest size bougies possible, at least once a week at first, then with increasing intervals. The patient should also be encouraged to eat solid food to aid in keeping the oesophagus open.

Mortality. There have been no deaths among the thirty-eight recorded cases, due to the immediate efforts of this method of treatment, a wonderful record. Winslow lost his first case, a child three years old, a month after operation, from exhaustion.

Before closing, I must enter a plea for earlier operation in cases of stricture of the oesophagus. And I cannot do so to better advantage than to quote from Dr. Meyer's article already mentioned. "It is to be hoped that, in view of these excellent operations, cases of malignant, and I can add cicatricial stenosis of the oesophagus, will be referred to the surgeon in the early and not in the last stages of the disease. As soon as fluids and semi-solid food find some resistance, or as soon as the patient is visibly losing ground," says Mikulicz, "gastrostomy is indicated." I should make an addition to this dictum, and say, and as soon as the scales show a steady, though perhaps slow decrease in the patient's weight. For this reason such patients should be ordered to weigh themselves every week or fourteen days and report to the physician. It is absolutely wrong to let gastrostomy be the very last resort. By such temporizing, a condition of inanition will be produced in the patient which contra-indicates an operation that otherwise has very little risk. The

surgeon can do nothing with an exhausted patient. The physician should be cognizant of the fact that a certain degree of strength and resistance is needed to stand even a relatively small operation; that a certain degree of active work of the tissues of the organs and of the whole organism is required to heal even a small wound; and that, lastly, the faculty of digestion and assimilation in the gastro-intestinal tract ceases in a certain stage of inanition, and cannot be awakened, even when a gastric fistula has been established. The patients starve to death with a full stomach, with full intestines. (Van Noorden.)

MEDICINE WITHOUT DRUGS.

(Abstract.)

By Solomon Solis-Cohen, A. M., M. D., of Philadelphia, Pa.

Dr. Cohen said that while it was always possible to tell the truth and nothing but the truth, it was never possible to tell the whole truth concerning any medical subject in a brief address. If, therefore, he spoke of treatment without the use of drugs it was not to condemn their use; on the contrary, he had a robust faith in the use of the right drug, in the right dose at the right time. He could not agree with the previous speaker concerning the difference between rational medicine and empiricism. The father of scientific medicine was Hippocrates, the Empiric, and dogmatism, which is the true opposite of empiricism, remains the greatest enemy to medical progress. Rational empiricism consists in the orderly arrangement and analysis of observed facts, not only in the laboratory but also at the bedside, and in drawing from the data thus established inductions to the principles of science and deductions to the applications of art. In the experience to which rational physicians look must be included the whole history of the human organism, and, indeed, so far as these can be learned, a study of the conditions that have affected the living matter before it became human. For in the actions and reactions of living matter and its environment, from the simplest to the most complex, are to be found the influences which have determined not only the physiologic and pathologic development of man, but also the power of the organism to recover from the disturbance we term disease. The speaker laid stress upon the word "recover." The rational physician does not attempt to "cure" but to assist them toward re-

covery, guarding against the dangers that lie upon the road to recovery, and against the forces both internal and external that oppose progress thitherward. It is important to realize that the human organism is endowed with a power (or powers) to re-establish the balance of function we call health when that balance has been disturbed in what we call disease. It makes no difference what the cause of this disturbance may be—whether, for example, the action of a microbe, some meteorologic influence, or a force acting upon the mental state. We must study the origin and mechanism of symptoms in order to separate those evidently morbid from those indicating a tendency toward recovery. Thus Hippocrates taught that fever-heat is a salutary reaction, and Sydenham preached the same doctrine. To-day we know that the body heat is one of the forces that destroys the active agent of an infective disease—the microbe, or its toxins. The practical importance of this truth has been impressed upon us by the disastrous results following efforts to treat such morbid processes as typhoid fever, by the administration of the coal-tar antipyretics; as well as by the good results following systematic cold bathing, which is not an antipyretic measure but is directed against the morbid complexus, incidentally restraining excessive temperature reaction.

In relation to the use of the cold bath in typhoid fever, the speaker stated that whereas he had publicly commended it in lectures in 1886 and in a communication to the *Philadelphia Medical and Surgical Reporter* of June 25th, 1887, thus antedating many of its present American advocates, he had not been able to go to the same length as some in advising its routine administration. Like every other powerful measure, it must be used with good judgment. It is the best routine method of treatment, but all routine methods are bad. He differed also from the teaching accepted con-

cerning the degree of reaction to be produced by a single bath. To suddenly reduce temperature, whether by drugs or cold water, from 105° F. to normal or below, then permitting it to shoot up again, and again reducing it, making a chart that resembled that of septicaemia, did not seem rational. It did not follow the gradual method of natural recovery. Accepting the temperature simply as an index of the activity of morbid processes and not ordinarily as in itself a thing to be combatted, the speaker endeavored by cold bathing to multiply the number and increase the extent of the natural remissions, bringing down the temperature-index about one degree Centigrade (say 1.5° to 2° F.) by a single plunge; and he had observed that in the course of a few days the maximum elevation of temperature reached a lower level than it did in similar cases treated by the strict Brand method. The initial temperature of the bath, the rapidity and extent of its reduction, and the length of a patient's stay in the water were determined by the individual effect and were varied accordingly.

Returning to the main theme, attention was called to the fact that—given the original living matter and its innate forces and tendencies—man has come into his present physical, mental, and moral condition through habit and environment. Under these general heads come the effects of climate and weather (including heat and cold, the physical and chemical constitution of the atmosphere, sunlight and other light, electricity, etc.,) the use of water, food, methods of feeding, rest and exercise, physical and mental, and last, but not least, though very commonly overlooked, emotion. These and similar influences then, having helped to make man what he is, may well be employed to remake him, when he departs from normal.

The pathologic effect of emotion is well shown in the production of exophthalmic goiter. As mental emotion can thus bring about disease, so it may be used to bring about

recovery in carefully selected cases. Faith cure, mind cure, hypnotism, suggestion, etc., have a rational basis, and physicians should study and use mental therapeutics rather than permit charlatans to abuse them.

Climate was briefly referred to, and special stress laid upon the ocean as a health-resort, especially in pulmonary tuberculosis in its earliest stage, or in later stages with high fever when altitude would prove disastrous. A long voyage preferably upon a well-equipped sailing vessel, the route being chosen with one regard to time of year, was highly commended. An important factor, in its effect on the human organism, is altitude. The rarefaction of the atmosphere upon mountains and high plateaus makes necessary the inhalation of more air for the absorption of a given quantity of oxygen. Moreover the oxygen is under a lower tension than at the sea-level, and this demands an increase in the number of oxygen carriers—the red blood cells—and also in the percentage of haemoglobin. This is one of the potent factors in the benefit of altitude upon the tuberculous. Recent careful researches have fully confirmed the observations made long ago by Paul Bert in the oxygen chamber. In anaemic patients, the effect of altitude in improving the blood is permanent, even though the person returns to the lowland. Similar effects may be secured without sending the patient away from home by the use of appropriate apparatus, such as the pneumatic chambers of Tabarie and his successors, the gasometers of Waldenburg and his successors, and the pneumatic cabinet of Williams.

Pneumatotherapy demands more attention than it has yet received in America. In the diving-bell (or Tabarie) type of apparatus, and its modifications—the method of "absolute pressure"—one is both immersed in and breathes air of altered density, condensed or rarefied as may be. This induces marked physiologic alterations, and is of great benefit in affections of the skin, of the circulatory system, and of

the respiratory organs; as well as in diseases of nutrition generally. Unfortunately, this form of apparatus is expensive and its use limited to certain resorts.

In the methods of differential pressure by portable apparatus—Waldenburg's and its modifications, of which the speaker had been guilty of one form, and Williams's cabinet—the air breathed differs in pressure from the atmosphere in which the patient is immersed; and hence the physiological reactions differ from those of the absolute pressure method. In the pneumatic cabinet, while theoretically it can do much more, practically one is restricted to inhalation of compressed air and exhalation against compressed air, whereas with the older Waldenburg apparatus and its variations there are eight combinations of inhalation and exhalation with compressed and rarefied air and the normal atmosphere. The latter forms of apparatus are therefore to be preferred. In addition they are less expensive and can be used at a patient's house. In some cases, as of asthma and emphysema, expiration into rarefied air is important. The speaker had had satisfactory experience in the treatment by pneumatic methods not only of asthma but of pulmonary tuberculosis, chronic pleurisy, anaemia, and dilatation of the heart. The effect was easily understood by the mechanical improvement of respiration and circulation, and consequently of nutrition. Without apparatus, systematic respiratory gymnastics and the forcible inhalation of ordinary air sometimes do good.

Another method of treatment without drugs is to be found in the now celebrated "Schott treatment" of heart disease as practised at Bad Nauheim. Having used the warm saline and carbonated baths and the gentle resisted exercises for more than two years, Dr. Cohen had become deeply impressed with their usefulness.

In the judicious alternation of rest and exercise, one had a method of treatment which was in harmony with that at work throughout all nature. The uses of the Weir-Mitchell

"Rest Cure," of massage, of electric applications and the like were discussed.

The use of water internally and externally and of cold and hot applications by ice-bags, coils, touching, packing, sponging, bathing, etc., were next considered. Water may be abused, as is the case with all other good things. There is thus all the more reason for its scientific use by trained physicians able to discriminate both as to causes and methods. Especially in nervous diseases—organic, neurasthenia and vasomotor disorders—were the douche, pack and shower bath, if judiciously employed, of great assistance. In anorexia and other disorders of nutrition hydrotherapy was often useful. Conjoined with other treatment it assisted in keeping asthmatic patients free from recurrences. Lithemia and allied states, so common in this country, were more benefited by the use of water internally and externally and by regulated exercise than even by alkalies and piperazin; though the speaker would not like to give up the latter.

Diet was briefly referred to as a familiar topic.

Organotherapy being discussed, the speaker said that to take advantage of the natural function of an organ in the treatment of a disease is not like introducing a drug, or foreign substance, but is rather supplementing the natural reparative powers of the organism. This was the rational basis of the treatment of disease by the administration of organic extracts. Thus, adrenal gland substance or extract was the one remedy on which he could best depend for raising the blood pressure. He had seen good follow its use in asthma, in certain forms of albuminuria, in diabetes, in hay fever, and in exophthalmic goiter. Locally as a vascular constringent, an exsanguinator, it had been of great use in ophthalmic and laryngic practice, and might prove useful in hemophilia. Thyroid extract is a potent agent in restoring the functional activity of the skin and kidneys; quite apart

from its use in myxedema, akromegaly and simple goiter. Thymus extract seems to be of use in assisting nutrition, and had been of special service in exophthalmic goiter and other forms of vasomotor ataxia, but the speaker was unable to explain its action. Diphtheria antitoxin is a remedy exactly in line with the thoughts laid down as to the treatment of disease by aiding nature. Its virtue is chiefly immunizing rather than remedial. Hence it must be used promptly and in sufficient dosage.

Bloodletting, while it may have been abused in former days, is now too much neglected. In many cases, it is preferable to the administration of drugs. Cupping and leeching sometimes answer every purpose. In uremia, in apoplexy, in acute lobar pneumonia, both at the beginning and later when the heart is evidently failing, venesection has in the lecturer's hands saved life. Harley, of London, ably advocates visceral plebotomy.

In connection with bloodletting the use of physiologic saline solution by the skin or by the veins is to be commended in most cases. An instance of recovery from pneumonia, nephritis and delirium tremens under treatment by venesection and saline infusion into the veins was narrated; and the uses of saline infusion in shock, collapse, and hemorrhage referred to. In typhoid fever, pneumonia, acute nephritis, and similar toxemias, hypodermoclysis, even without venesection, or when venesection is contraindicated, often helps to overcome disease by stimulating the natural functions of elimination. In some cases the fluid might be thrown high into the colon if the subcutaneous method was not feasible. In cholera the supply of heat and fluid whether by the veins, the peritoneum or the rectum had a special usefulness.

In conclusion, Dr. Cohen emphasized as the fundamental thought of his address that by studying the means through which nature has brought the human organism to its

present condition and endowed it with the power of resistance to climatic vicissitudes, inclemencies of the weather, etc., as well as with the ability to resist diseases by automatic cell-action, modifying functions, producing alexins and antitoxins, and generally readjusting vital processes to the emergency, the physician would learn how to employ the same means or such modifications of them as are in his power, or as circumstances require, in assisting the natural processes of resistance and recovery. While doing this, much assistance may temporarily be given by drugs, but it is a mistake to make them the sole dependence. It has become full time for teachers and writers to lay greater stress upon those therapeutic measures other than drugs which have been used by the great teachers of medicine in the past and will be more and more used by the rational physician in the future.

BRIEF COMMENTS ON THE MATERIA MEDICA, PHARMACY AND THERAPEUTICS OF THE YEAR ENDING OCTOBER 1, 1899.

By E. H. Squibb, M. D. (Junior)

ALPHABETICALLY ARRANGED.

Read by title at the Sixteenth Annual Meeting of the New York State Medical Association on October 26, 1899.

It appears to be quite necessary to again remind those who criticise the writer's plan and scope in these Comments that the original design was to abstract from the results of the clinical experiences reported in the prominent current medical literature, and this has been quite closely followed for the past seven years. It must not be expected that the claim of every investigator for his new agent will receive attention, for such is far beyond the scope intended. Again the readers of these Comments should bear in mind that if any information be desired concerning any statement that has been made the writer should be addressed and *not* his father—Dr. E. R. Squibb. Thus much time and annoyance, to say the least, will be avoided.

Acetanilid (Antifebrin) has unfortunately lost none of its dangers during the past year. Its use has been pushed in some new fields however with very varying results. Some of the few comparatively newly-tried fields may be mentioned.

Mr. Charles J. Barry, of Fulham Road, London, S. W., England, has met with success in its use in the treatment of sunstroke. He relates a case and concludes by stating:

"My object in writing these few notes is to bring forward

the merits of a comparatively little-known drug in reducing temperature in a disease which usually claims its high mortality of 50 per cent., from the excessive pyrexia set up by some obscure form of vasomotor paralysis. Acetanilide (antifebrin), in my opinion, is a good and safe antipyretic when given in small doses with port wine or brandy." (*Brit. Med. Jour.*, Vol. II, for 1898, page 1550.)

Dr. Edmund C. Brush, of Zanesville, Ohio, presented a paper to the Section on Practice of Medicine at the annual meeting of the American Medical Association held at Columbus, Ohio in June last, on "Acetanilid in Typhoid Fever, with a Report of Six Cases." They were cases which originated at Camp Thomas, Chickamauga, Ga. In addition he saw ten other cases, but the details of these are not given. He closes as follows:

"It is to be remembered that these patients were robust young men, that the feeding and care given them was systematic, and they never questioned what was to be done.

"I do not present this paper because I think that I have found *the* treatment for typhoid fever, but because in using acetanilid, I had success, and I believe that, used with judgment, it is a valuable remedy in treating typhoid fever. Please observe that no attempt was made to produce a sudden fall in the temperature by using large doses. I preferred to give small doses and by repeating them produce a gradual decline in the fever. Excepting one case, three grains was the largest dose given.

"Furthermore none of the remedies used were given unless their need was clearly indicated. The whole idea was not to medicate, but to pilot the patients through the rapids of the disease and to land them on the shore of recovery."

The discussion which followed the reading of the paper is of interest. (*Jour. Amer. Med. Assoc.*, Vol. XXXIII, page 582.)

The use of Acetanilid in surgery has apparently not abated, and the following case will illustrate the excess to which it has been used. Dr. M. D. Schmalhorst, of St. Louis, Mo., "literally stuffed full" with Acetanilid a six-inch scalp wound with fracture and depression at each dressing, and states that the result was all that could be hoped for. He also used large quantities in a compound comminuted fracture of the leg. He states he has been using it exclusively for three years for he finds it cheap and non-toxic and "will clear up an infected wound quicker than anything I have ever used either in hospital or in private practice." (*N. Y. Med. Jour.*, Vol LXIX, page 358.)

The question of forming an Acetanilid habit has recently been brought forward most prominently. Dr. Amelia Wood Gilmore, of Auburn, N. Y., presents "a clinical experience of the prolonged daily ingestion of Acetanilid which, so far as I know, is without parallel. For a period of 20 months less 4 days there was daily use of 5 to 10 grains of the drug combined with an equal amount of sodium bicarbonate." The patient was suffering from a carcinoma of the uterus. (*Phila. Med. Jour.*, Vol. 3, page 1423.)

The danger from the so-called "Headache Powders" is still as important a question as ever. The use of such powders is surely on the increase. It has been recommended that their composition be required on each package with the idea of attempting to minimize the evil results by thus warning the patients of the dangerous ingredients. This, however, would probably have very little effect for the reason that the sufferer thinks little of the danger at the time—only looking for relief. Legislation is also suggested, but even this cannot put reason into the minds of those who are utterly oblivious to their own welfare.

Prof. J. W. Baird recently contributed the following notes from the Analytical Laboratory of the Massachusetts College of Pharmacy:

"In order to determine the ingredients in some of the more commonly used

HEADACHE PREPARATIONS,

Mr. Geo. A. Wilson, Ph. G., obtained thirty-six different preparations and submitted them to a qualitative analysis. Twenty-nine of the samples were obtained through the wholesale houses and are those that are largely advertised in Boston. The remaining seven were purchased from different retail stores of good standing and were sold on inquiry for 'something for headache.'

"In the analysis attention was paid to the active ingredients principally, and little or no time was spent upon diluents, coloring matters, aromatics, etc.

"The following is the list of articles and the number of samples in which each was found:

Acetanilid	in 30 samples
Sodium Bicarbonate	" 19 "
Caffeine	" 14 "
Phenacetine	" 5 "
Tartaric Acid	" 4 "
Potassium Bromide	" 3 "
Camphor	" 3 "
Camphor Monobromate	" 2 "
Sodium Salicylate	" 2 "
Quinine Sulphate	" 1 "
Potassium Bicarbonate	" 1 "
Antipyrine	" 1 "
Sulfonal	" 1 "
Ammonium Carbonate	" 1 "
Ammonium Bromide	" 1 "
Salicylic Acid	" 1 "
Potassium and Sodium Tartrate	" 1 "

"In addition to above, some contained sugar, milk sugar, celery, charcoal, calcium carbonate, and sangunaria, while

two evidently contained belladonna and gelsemium." (*New Eng. Druggist*, Vol. XI, page 524.)

Dr. Jacob Sobel, of New York city, has published an article on "Dangers of Headache Powders: Report of a Case, with Tests for the Suspected Ingredients" and recommends that all such powders should be fortified, if necessary, with such cardiac stimulants as caffein, spartein, camphor monobromate, etc., and that no more than 200 milligrammes (3 grains) of Acetanilid should be dispensed in any one powder, (*N. Y. Med. Record*, Vol. 56, page 477.)

Dr. George F. Libby, of Portland, Me., reports gratifying results from the use of this agent in the treatment of suppuration of the middle ear in a series of seventy-five patients covering a period of three years. He gives the history of ten of those cases. An explanation of the details of his treatment is interesting and of value to the specialist. (*Med. News*, Vol. LXXV, page 493.)

The poisoning cases reported are unhappily many for the past year. Only a few, therefore, of the most prominent will be mentioned here.

At a meeting of the Phila. Pediatric Society held on April 11th last Dr. T. S. Westcott, of Philadelphia, Pa., reported a case of poisoning after its application to the external surface of a female infant's thighs, aged 4 months. In the discussion which followed cases were related by Drs. Alfred Hand, J. S. Gillespie and Branson. (*Pediatrics*, Vol. VII, page 539.)

Dr. Frederick C. Keller, of New York city, has reported a case of interest. This was a child whose parents thought they were administering a harmless drug. (*Phila. Med. Jour.*, Vol. 3, page 240.)

Dr. Philip King Brown reported at a meeting of the San Francisco County Medical Society on December 13th last, a case of poisoning in a male patient 37 years old, which is claimed to be of unusual interest for the reason that it had

been so carefully studied, both before and after death. The discussion which followed will be interesting to those who are following up these cases. Dr. Brown closed his remarks by stating that "starvation played a good part in causing death, and had it been possible to keep the patient nourished he would perhaps have recovered." (*Pacific Rec. of Med. and Surg.*, Vol. XIII, page 197.)

Derivatives of Antifebrin and Phenacetin have been suggested for trial with the hope of rendering each of these powerful agents less toxic. The radical SO_3 has been introduced into their composition for this purpose, and the resulting products have been called "Cosaprin" and "Phesin" respectively. The two observers Drs. Zoltán von Vámossy and Béla Fenyvessy of Buda-Pesth, Hungary, have experimented with these new agents as antifebrile and antirheumatic remedies. Cosaprin, the derivative of Antifebrin is reported to be a grayish-white powder with a salty taste, odorless and readily soluble in water, with a slight acid reaction.

Dr. Richard Rosen, of Berlin, Germany, has followed up their results by giving both Cosaprin and Phesin in 50 carefully observed clinical cases. No toxic symptoms were observed although comparatively large doses were given, even up to six grammes (about $1\frac{1}{2}$ drachms) in 24 hours. Cosaprin was found preferable to Phesin, as it is tasteless and the latter has the unattractive look of ink. Chronic rheumatism was apparently unaffected by these agents, and their antipyretic effect was too slight to be of practical value. (*Therap. Monats.*, Vol. XIII, page 156.)

Acid Acetic as a menstruum for the exhaustion of crude drugs has at this time become such a widely observed fact that it seems quite reasonable to assume that such a use of this agent has become established and will be generally recognized after all have tried and experimented with it. During the past year the list of drugs which have been

thoroughly exhausted by this agent has very markedly increased, and it may be well to enumerate here those drugs which have been actually tried on a larger scale than experimentally. They are the following:

Aconite Root,
Allspice,
Arnica Root,
Belladonna Leaf,
Belladonna Root,
Black Pepper,
Buchu,
Buckthorn,
Burdock,
Cannabis Indica,
Capsicum,
Cascara Sagrada,
Cascara Sagrada Arom.,
Cassia, Saigon,
Cardamom,
Celery, French,
Cimicifuga,
Cinnamon, Ceylon,
Cinchona, Red,
Cinchona, Yellow,
Cloves, Zanzibar,
Coca,
Colchicum Seed,
Coriander,
Cypripedium,
Dandelion,
Digitalis,
Ergot,
Eucalyptus,
Garlic,
Gelsemium,
Gentian,
Gentian Compound,
Ginger, Jamaica,
Hydrangea,
Hydrastis,
Hyoscyamus,
Ipecac,
Juniper,
Larkspur,
Leptandra,
Lobelia,
Mace,
Malt,
Marjoram,
Nutmeg,
Nux Vomica,
Prickly Ash,
Red Pepper,
Rhatany,
Rhubarb,
Sanguinaria,
Sarsaparilla,
Sarsaparilla Comp.,
Senega,
Senna,
Spigelia,
Squill,
Thyme,
Valerian,
Yellow Dock.

As far as can be now learned there have been only five so-called failures to accomplish the results expected in such exhaustion. These are to be considered only provisional failures for it is expected that after more practice and experience some of these may be brought into line. The five drugs alluded to are: Cubeb, Cannabis Indica, Liquorice Root, Male Fern and Podophyllum. In the case of Cannabis Indica, it has been found that after many trials it may be thoroughly exhausted with a menstruum consisting of equal parts by weight of 60 per cent. acetic acid and officinal alcohol. The veterinarians are now using such an Acetic Fluid Extract with a saving of more than 50 per cent. of alcohol and a corresponding reduction in price. With Liquorice Root, as was to be expected, the glycyrrhizin is thrown out when a 10 per cent. Acetic Acid is used and thus a finished product has not yet been obtained. In some of the finished Acetic fluid extracts classed with those as being thoroughly exhausted by this agent, a few are unsightly when freshly prepared—such as Conium, Senega, Wild Cherry and some others, but they all considerably improve on standing, so that if they are allowed to settle for a few months they compare very favorably with the officinal fluid extracts which also require settling to make them appear to advantage.

By actual trial both in the hands of the veterinarians and the practicing physician, a fluid extract of Colchicum Seed made with Acetic Acid has been produced which should bring it again into that prominence it has always deserved and which position it held in years past when the old "*Acetum Colchici*" was officinal.

A prominent reason for the failure of not only this older preparation but all others under the head of Aceta was that they were gradually becoming less concentrated and weaker in the Acetic Acid used for their extraction, and therefore less efficient. This caused a gradual decline in their use

and finally they fell into actual disuse. This evidently should not have been permitted to occur for an investigation into the cause would have retained the whole class of preparations. Colchicum Seed was a well-known and effective agent in the treatment of gout in the time of the Aceta Colchici and when the alcoholic fluid extracts came into prominence it was found difficult to decide between an extract made from the root or from the seed on account of the uncertainty in the activity in the different parts of the plant. The officinal solid extract of Colchicum is made from the root, and if it were possible always to secure sliced corms that were taken at the proper season, carefully dried, and not too old, there would be no doubt that the root would be the best material for an extract, but as the seed can only be taken at the proper season, and dries without risk of deterioration, its quality is much more easily adjusted and it must yield an extract that is more uniform in quality and strength. From clinical experience this is proved to be a correct deduction, but by the use of the officinal alcoholic menstruum the preparation has been made comparatively expensive and the exhaustion has been somewhat incomplete. Thus the efficiency of the fluid preparation has not been restored to that of the older Acetum Colchici. After some experimentation by which the proper per cent. of Acetic Acid is found as a menstruum, these difficulties are so largely overcome in the Acetic fluid extract now presented that it is again well worth the attention of all practitioners, and if the experience of the veterinarians in particular be verified in general practice, this preparation surely ought to have a very prominent place again in the treatment of gout.

It has been remarked by more than one observer studying this subject how complete the exhaustion of Nux Vomica is with an Acetic Acid menstruum. It has long been a well-known fact that after as complete an exhaustion as practic-

able with the officinal alcoholic menstruum, a very decided bitterness remains in the mark, but with Acetic Acid the mark may be chewed quite indefinitely without producing the slightest bitter taste.

The advantages of Acetic Acid as a menstruum over alcohol alluded to here last year have not only been thoroughly verified but the statements then made have been still more forcibly impressed upon those who have been working in this line. The following very broad statements or axioms may now be confidently laid down:

All the alkaloidal drugs are readily and thoroughly exhausted by this agent;

From a series of experiments now somewhat extended, Acetic Acid does *not* convert the alkaloids present into acetates but acts simply *as a solvent;*

As far as experiments now show, in 90 per cent. of those drugs which have been successfully exhausted, it is a better solvent than alcohol—producing an extraction more thoroughly representing the drug than was ever accomplished with the alcohol menstruum;

For the purpose of prescription writing, it is important to realize that all water soluble salts are soluble in Acetic Acid, and thus combinations of the Acetic fluid extracts with the bromides, iodides, sulphates and chlorides can be accomplished and without danger of decomposition;

The older preparations which are favored by many (especially the older practitioners), such as the aceta, decoctions and infusions can be safely prepared from the Acetic fluid extracts;

After the experimental stage has been completed and sufficient time be allowed to offer a finished preparation by settling, the cost of the Acetic fluid extracts will be found to be very much less than the officinal alcoholic preparations.

As another illustration of the advantage to be obtained

by the substitution of Acetic Acid for some of the mineral acids in the already officinal preparations, it may be interesting to mention that an Aromatic Acetic Acid has already been sufficiently tried to establish its superiority over the present officinal Aromatic Sulphuric Acid. This Aromatic Acetic Acid is prepared simply by substituting 99.5 per cent. Acetic Acid for the sulphuric acid in the formula used in preparing the officinal preparation. A vegetable acid is undoubtedly less irritating and more beneficial to the alimentary tract than a mineral acid, and therefore it is claimed that this combination will prove useful in many cases.

Acid Boric, sometimes called Boracic Acid, has undoubtedly an increased use in medicine, aside from its preservative qualities in other directions. It has recently been recommended in a somewhat new field—the treatment of pertussis.

Dr. G. Arbour Stephens, of Swansea, England, has written an article on "The Treatment of Whooping Cough," in which he uses a lukewarm Boric Acid lotion for rinsing out the ears night and morning. He relates eight cases, and concludes:

"I have given these 8 cases as typical of a cough which, after being under treatment for a few days, entirely lost the bouts of 'whooping,' though in some cases bronchitis lasted for several days. I could add many other cases to show both the ear symptoms and the effect of local treatment but do not think it necessary. As an explanation of the pathology of these cases I consider that there is a small local inflammation in the meatus starting independently of or succeeding to an attack of measles, and that this inflammation irritates the nerve filaments which are connected with the root ganglion of the vagus and so stimulates the vagus itself in some or all of its branches. The laryngeal branches will account not only for the spasm but also for the 'whoop' by producing a temporary trophic

lesion of the laryngeal mucous membrane against which the cold air, which is invariably drawn in through the mouth, strikes. I also think a similar trophic lesion of a temporary nature occurs in the stomach and lungs by a passing irritation of the vagus branches which results in the secretion of a large amount of mucous." (London *Lancet*, Vol. II for 1898, page 1471.)

Dr. S. Glanville Morris, of Nantgaredig, Carmarthen, Wales, relates two cases treated according to the same method, and reports that both children appeared to be well by the fifth day. (London *Lancet*, Vol. II for 1898, page 1702.)

Acid Cacodylic, a new organic arsenical compound lately experimented with as a substitute for the ordinary arsenic preparations. Chemically this acid is known as Di-Methyl Arsenine (Cacodyl) Hydrate. It is described as a crystalline, odorless compound containing 54.4 per cent. of metallic arsenic which is equivalent to 71.4 per cent. of arsenic oxide (known as arsenous acid), and soluble in water. The name Cacodyl was long ago given to Di-Methyl Arsenine on account of its very offensive odor. Some observers have claimed that all the Cacodyl compounds are non-toxic, but Dr. Herman Gijselman, of Batavia, Java, claims to have proved the contrary. (*Wien. klin. Wochensch.*, Vol. XII, page 363.)

Dr. J. Renaut, of Lyons, France, presented a communication at the meeting of the Paris Academy of Medicine held on May 30th last in relation to the therapeutic value of Sodium Cacodylate (*Bull. de l'Acad. de Méd.*, Vol. XLI, page 545). He made use of it at the suggestion of Dr. Gautier.

Dr. Gautier then contributed a paper at the next meeting of the Paris Academy of Medicine on June 6th on the therapeutic uses of Cacodylic Acid and its Compounds (*Bull. de l'Acad. de Méd.*, Vol. XLI, page 604).

It will be noticed that the two observers differ slightly in their opinion of its action.

Its prominent use has been in skin diseases, from which some favorable results are reported, chiefly in old obstinate cases of psoriasis.

The disagreeable odor given to the breath was obviated by using hypodermic injections. The sodium salt of this acid was made use of in this way. About an average dose was from 300 to 600 milligrammes (about 4½ to 9 grains). Marked improvement in the physical signs was reported at the end of such treatment. The cases are apparently too few as yet upon which to base a definite opinion as to its usefulness, for the general hygienic conditions required were important factors in the improvement noticed.

Dr. Danlos, of Paris, France, who had used this acid and reported upon it some five years ago, now takes pains to report again at the meeting of the Paris Medical Society of Hospitals on June 16th last his still further favorable results (*Bull. et Mémoires*, Vol. 16, page 588.) He used the sodium salt up to 40 grammes (about 617 grains) daily, both subcutaneously and by the mouth. He has treated some sixty cases of psoriasis with good results although he has to note a tendency to relapse. By internal administration this acid has produced good results in his hands in lupus erythematosus and in tuberculosis of the skin. He obtained negative results in acne pustulosa, lupus vulgaris and mycosis fungoides. He claims the advantages of this agent are its greater tolerance than the ordinary arsenic preparations, and its applicability to hypodermic medication, producing most effective and painless results.

Other observers have reported on the use of this acid as well as its sodium salt, but the above are the most important during the year.

Acid Carbolic (Phenol) appears still to be the most easily obtained and most "popular" poison for those who suddenly desire to end their trials of one kind or another. The list of poison cases in fact is rapidly increasing, and there is heard on all sides a demand for legislation by which

it is expected such control may be placed over the article as to prevent its being purchased indiscriminately. How much good such legal restriction will do is a question, but no doubt it will have some retarding effect. This question is a burning one not only in this country but abroad and even the English House of Commons has been appealed to.

Dr. J. Drysdale Buchanan, of New York city, has made use of alcohol to wash out the stomach in such cases of poisoning. He reports (N. Y. *Med. Record*, Vol. 56, page 241) using about two quarts of a 35 per cent. solution of alcohol. The patient had swallowed an ounce of 95 per cent. Carbolic Acid and entirely recovered although the face was badly burned and the mucous membrane of the mouth seemed entirely destroyed. Dr. Buchanan believes that this is the first time that alcohol had been used internally for the burns of Carbolic Acid, but Dr. Seneca D. Powell and Dr. A. M. Phelps, both of New York city, have long made use of this antidote and have reported their results.

At the stated meeting of the Medical Society of the County of New York on February 27th last, Dr. Powell read a paper on "Carbolic Acid in Surgery," again alluding to alcohol as a perfect antidote, and expressed without doubt his belief that one could wash his hands in 95 per cent. Carbolic Acid, and after allowing it to remain for a few minutes would not suffer if his hands were rinsed off with alcohol. He had thus been able to make good use of this observation in its external use in different forms of abscesses, and even went so far as to treat some very severe cases of empyema by swabbing out the pleural cavity with strong Carbolic Acid, followed up with injections of alcohol. Severe cases of erysipelas could be promptly checked by applying even strong Carbolic Acid until the skin was quite whitened and then following it up with the application of alcohol. In the discussion which followed the reading of the paper Dr. Carter S. Cole introduced the interesting observation that a 2 per cent. solution of Carbolic Acid was

found by him to be most beneficial in ivy poisoning. (N. Y. *Med. Record*, Vol. 55, page 372.)

Dr. Henry A. Leipziger, of Burlington, Iowa, read a paper on "Carbolic Acid Gangrene" before the Tri-State Medical Society at its meeting in April last in Quincy, Ills., and stated that even a 3 per cent. solution may produce gangrene. He quoted many of the older observers in confirmation of his claim. He particularly cautions surgeons against using it as a dressing for injuries of the extremities. (*Virginia Med. Semi-Monthly*, Vol. 4, page 3.)

Dr. Edward J. Brougham, of Chicago, Ills., reports two cases with the same results. He has noticed that "the gangrene produced is always sharply circumscribed, and corresponds to the skin area in relation with the drug; it also is apt to be produced only when the entire circumference of the part is in contact with the destructive agent." (N. Y. *Med. Record*, Vol. 55, page 91.)

Dr. Bernard Weiss, of New York city, has reported "A Case of External Carbolic-Acid Poisoning Treated with Sodium-Sulphate Solution." (*N. Y. Med. Journ.*, Vol. LXIX, page 21.) As Dr. A. M. Phelps points out, no doubt sodium sulphate does exercise a soothing effect in local Carbolic Acid poisoning, but it will not prevent the blistering or the deep escharotic effect of Carbolic Acid when applied to the tissues. (*N. Y. Med. Journ.*, Vol. LXIX, page 62.)

Notwithstanding the increasing number of cases of ill-effects from this agent, it has its place of usefulness. A few of the prominent cases reported somewhat out of the ordinary may be of interest here.

Dr. Wendell C. Phillips, of New York city, has written a paper recently on "A Preliminary Report upon the Use of Pure Carbolic Acid in the Treatment of Mastoid Wounds and Chronic Suppuration of the Middle Ear." He gives the histories, briefly, of six cases. He concludes with the following remark: "In those cases in which the wounds show no tendency to granulation, and the depressions are found

filled with pus, pure carbolic acid applied every other day causes small healthy granulations to spring up and greatly facilitates the final healing of the wounds." (N. Y. *Med. Record*, Vol. 56, page 332.)

Dr. J. S. Stone, of Boston, Mass., relates a case of the dangers of Bromoform, Carbolic Acid and whooping cough in which a two year old girl was made to suffer from each of the above inflictions, and yet live after apparent death. (*Boston Med. and Surg. Journ.*, Vol. CXL, page 160.)

Mr. Arthur Wiglesworth, of Liverpool, England, has written a "Note on the Treatment of Influenza by large doses of Carbolic Acid," and before relating a case he states that for many years he had been prescribing this agent in cases of influenza in doses varying from 450 to 500 milligrammes (about 7 to 8 grains) every two hours with rapid relief from all the symptoms. An accident, however, revealed to him that such doses could be increased considerably not only without danger, but with far greater beneficial effects. (London *Lancet*, Vol. 1 for 1899, page 958.)

The treatment of tetanus by this agent has received considerable attention throughout the past year. Dr. Vittorio Ascoli, of Rome, Italy, recently published a monograph on this subject in which he made use of hypodermic injections of this agent. He sums up his conclusions as follows:

"(1) Statistics show better results from the carbolic acid method than from the use of serum. (2) The carbolic acid must be given hypodermically and in large doses. (3) Under its influence the muscular contraction and spasms diminish in a marked degree. (4) The acid acts in tetanus particularly as an antitoxic and a moderator of the reflex activity of the nerve centres. (5) The energetic local disinfection, combined with the support of the patient's strength, are the cardinal points in the treatment of tetanus. (6) Serum treatment is useful as a preventive, and also in the developed disease when it is possible to apply it early or when the production of toxins is still going on. But the

results of this method, if they cannot be ignored, are neither convincing nor brilliant. Even if it were the most efficacious method, symptomatic treatment must not be neglected. (7) A patient suffering from tetanus must be treated eclectically, regard being had to the wound, to the intensity of the intoxication and its duration, and to the special conditions present in the case. Carbolic acid in large measure fulfils the indications, and is therefore suitable for the majority of cases." (*Epitome of Brit. Med. Journ.*, Vol. I for 1899, page 15.)

Dr. D. Flavel Woods, of Philadelphia, Pa., has also reported a case of tetanus treated with Carbolic Acid, and states that this case was the only one he had ever seen recover. He concludes that this agent to be effective must be used in large and heroic doses, and in such is much more reliable than any serum he had ever tried. He also reports a case of tetanus in a horse being cured by the use of this agent at his suggestion. (*N. Y. Med. Journ.*, Vol. LXX, page 377.)

Dr. E. G. Barnes, of Eye, Suffolk County, England, reports on the use of strong Carbolic Acid "To get rid of Ants." He reports having used it on at least three occasions after carrying out the following plan:

"In the first place, ascertain by observation at what points the ants enter the house or store cupboard. It will usually be found that they do so, not by the open door or window, but through a crevice between the boards of the floor or between the skirting and the floor. Having found this, apply strong carbolic acid by means of an ordinary camel's hair brush, well into the crevice, and repeat the treatment for three or four days, watching meanwhile to see if the ants find a fresh place to enter, in which case that should of course be treated in the same way. At the expiration of this time, my experience is that the enemy is permanently routed. This plan is preferable to washing with carbolic acid in solution, or to exposing carbolic acid in

saucers, as by so doing the food in the store cupboard is apt to absorb the carbolic vapour and acquire the characteristic taste. If good acid is used, such as one would use for surgical purposes, and applied as I have described, no unpleasantness results." (*Brit. Med. Journ.*, Vol. II for 1899, page 511.)

Mr. Walter Colquhoun, of Glasgow, Scotland, has reported on his use of "Carbolic Acid as a Test for Albumin." He opens his remarks as follows: "Early in the course of my practice I was led to investigate the delicacy of our common tests for albumin and to search for another test which would have the delicacy of the nitric acid test without its fallacies." After describing his experiments in detail he concludes: "I may state that since my investigations I can speak with certainty as to the presence or absence of albumin, whereas before I had undertaken them I would not like to have certified in certain cases." (London *Lancet*, Vol. I for 1899, page 1221.)

The important and valuable paper on "The Action of Hepatic, Renal and other Cells on Phenol and Indol, under normal and pathological conditions," written by Drs. C. A. Herter and A. J. Wakeman and read before the Association of American Physicians on May 4th last is worth putting on record here simply for the benefit of those who desire to look up the subject in future. (*Journ. of Exper. Med.*, Vol. IV, page 307.)

The question as to what produces the change of color to a red or brown tint in Carbolic Acid is still a mooted one. Some still persist in the claim that green-glass bottles have a marked effect in producing that change. Others give iron, copper, ammonia or less rational explanations, but "A Note on the Cause and Prevention of Color-Changes," by Dr. A. I. Hoon, of Mercer, Pa., deserves attention. He firmly believes, by actual experiment, that the color developes in cork-stoppered bottles and not in those stoppered with glass. He has placed his samples under varying con-

ditions of exposure and has carried on his observations for somewhat over three years. He very rightly urges other observers to make similar tests and publish their results. It is however feared from some practical experience already known by others, that the cork stoppering will not yet account for the change. Observations are still being continued on the question as to whether or not sulphurous acid be the agent in preventing the discoloration. It is quite a well-established fact that the higher grades of Carbolic Acid carefully separated by distillation between very definite temperatures are far more apt to change color than fractions separated a little further along in temperature where the sulphur compounds in the coal-tar are split up and retained in the resulting product. Such a product, however, has not the very fine aromatic odor of the finer grades of Carbolic Acid, but does appear to remain colorless, which the better qualities of Acid do not.

There is now offered in England a combination consisting of 50 per cent. of liquefied Carbolic Acid with hard and soft soap. This has been given the name of "Carbo-Sapol." It is presented in the form of a thick, dark reddish-brown liquid which mixes very readily with water in all proportions. Its action upon the skin is free from any irritation and leaves it quite soft. It is recommended to the surgeon for washing out towels, sponges and other material used in his operations.

Acid Chloralb is the name given to a combination of chlorine and the albumin contained in cow's milk.

Prof. W. Fleiner, of Heidelberg, Germany, has investigated its therapeutic effects in diseases of the stomach, particularly in carcinoma of that organ. He makes use of it in doses of 1 gramme (15.4 grains) administered immediately after washing out the stomach in the morning, as well as before the meals in the middle of the day and in the evening. He finds that it acts on the intestinal tract as well as on the stomach and is most useful in atonic affections due to

loss of appetite, diminished secretion of hydrochloric acid, abnormal amounts of organic acids, and deficient intestinal absorption with constipation. He would class this new therapeutic agent not as a drug but rather in an intermediate position between the so-called nutrient salts and the nutritive preparations. (*Muench. Med. Wochensch.*, Vol. 46, page 1.)

Acid Citric has been recommended for the treatment of ozena by Dr. Hamm, of Brunswick, Germany, who has led up to the point of using it from the well-known fact that all fruit juices act as effective deodorizers. His results proved that it not only removed the peculiar foetor but exerted healing properties. He employed it in several cases with very prompt and lasting effects. His plan was to rinse out the nose thoroughly every morning and introduce, by insufflation, a mixture of equal parts of Citric Acid and Milk Sugar three times a day. The secretion also promptly lessened. (*Muench Med. Wochensch.*, Vol. 46, page 480.)

The following formula has been suggested to disguise the bitter taste of quinine:

Quinine Sulphate.....	4 grammes	(61.7 grains)
Citric Acid.....10	"	(154.3 ")
Simple Syrup 10	"	(154.3 ")
Syrup of Orange Peel.....10	"	(154.3 ")
Distilled Water, sufficient quantity to make .....20Cc.		(324.6 minims)

Ten drops of this mixture is directed to be poured into 50 grammes (about 1½ fluidounces) of water and then 3 grammes (46.3 grains) of Sodium Bicarbonate added. This should be swallowed while it is effervescing. (*Gaz. degli Osped. e delle Cliniche*, Vol. XIX, page 1648.)

Acid Lactic is claimed by Dr. Sneguirev to play the part of a natural antiseptic in preventing the development of the various microbes found in the vagina for he claims to have proved that the acidity of the vaginal mucous is due to

Lactic Acid being present. Thus he was led to use solutions of this acid to destroy infectious bacteria. According to his observations a 3 per cent. solution introduced in the form of a douche not only acted as a deodorizer on the discharge but changed its color and checked the leucorrhea. Endometritis was "cured" by applying this acid either in the form of a powder or solution to the cervix and cavity of the uterus, causing copious desquamation of the epithelium. (*Jour. de Med. de Paris*, Vol. XI, page 316.)

Acid Picric (Tri-Nitro-Phenol) is being used in about the same class of affections as reported upon last year. It has been pretty generally observed that it is most effective in the treatment of burns of the first and second degree.

Dr. Dakhyle has written A Critical Contribution to the Study of Picric Acid in the Treatment of Burns. (*Le Progrès Médical*, Vol. IX, third series, page 7.) He claims that it is the best topical application to hasten the cicatrization of burns, being well adapted for both children and adults. He asserts that it is of value in superficial burns of the second and third degrees, but he does not approve of it in very young children. In the case of superficial burns he makes use of a saturated solution in ether or alcohol. In cases of chronic suppurating burns he used it with iodoform and ichthyol.

Dr. Ian MacDonald of the Rio Tinto Company, Spain, reports on the use of this Acid in superficial wounds, and makes the following claims for it:

"In my experience Picric Acid has not caused toxic symptoms either in children or adults. I venture to say that a closer examination of the so-called toxic cases will reveal the fact that the symptoms were precisely those of septic absorption so commonly observed in grave burns under any treatment.

"The advantages of Picric Acid in superficial burn treatment may be briefly summed up as follows: (1) Simplicity of

application; (2) painlessness; (3) rapidity of healing due to —(*a*) epidermisation under scabs (*b*), a favouring of epithelial growth, (*c*) a minimum of suppuration; (4) absence of local irritation, or of general toxic effect; (5) a smoother, more natural cicatrix than that obtained with other methods." (*Brit. Med. Jour.*, Vol. I for 1899, page 1152.)

Dr. F. Radaeli reports his results obtained in Prof. Pellizzari's Clinic in Florence, Italy, in cases of eczema of different forms. He obtained satisfactory results in a number of cases of acute eczema of the scalp, chronic eczema, diffuse acute eczema, eczema impetiginoides of the face and the like. (*Epitome of Brit. Med. Jour.*, Vol. I for 1899, page 40.)

Acoine is a very recently introduced local anaesthetic described chemically by the long name of Di-Paran-Isyl-Mono-Para-Phenetyl-Guanidin Hydrochlorate. It has not been further described in the way of preparing it, and therefore is probably not of much prominence as yet although it is claimed to have some advantages over cocaine. It appears to be less toxic and does not affect the accommodation. The paper introducing it was written by Dr. Trolldenier of Dresden, Germany, and will be found in the *Therap. Monats.* (Vol. XIII, page 36.)

Dr. Robert L. Randolph of Baltimore, Md., has published a report under the head of "A Communication upon Acoin —a New Local Anaesthetic." He has experimented upon rabbits using it both in the powdered form and in varying strengths of solution. He has also made use of it in the proportion of 1 to 100 and 1 to 300 in the human eye, and reports that in many respects it is not as satisfactory as either cocaine or holocaine. (*The Ophthalmic Record*, Vol. VIII, page 401.) If the eye be congested or irritated repeated instillations will not give satisfactory anaesthesia, will not act as rapidly and produces rather more of a stinging sensation than the other anaesthetics. No doubt more will be heard about this agent later.

Actol (Silver Lactate) has been little commented upon throughout the past year. It however is still under observation but with little new concerning it from even those who have thought well enough of it to mention their results. The acute stage of gonorrhea seems to be the particular affection for its use.

Airol (Bismuth Oxy-Iodo-Gallate) has not received much attention in the medical journals of the year.

Dr. F. Cerato has made use of it in different forms of enteritis. He states that he has used many agents with very varying results. For instance he found small doses of calomel and opium of some use in dysenteric catarrh but useless in serous catarrh of the intestinal tract. Even these agents have their disadvantages. He has experimented with tannic acid, krameria, colombo, bismuth, tannigen and tannalbin with some temporary results, but the diarrhea returned. He then made use of Airol in nine consecutive cases in doses varying from 325 to 500 milligrammes (about 5 to 8 grains) repeated frequently with excellent results. To the iodine present is due most of the good results although its astringent properties are marked. (*Gaz. degli Osped. e delle Cliniche*, Vol. XIX, page 1502.)

Dr. L. von Lesser, of Leipsic, Germany, read a paper "On Antisepsis" before the Medicinische Gesellschaft of that city. He apparently was looking for an iodoform substitute and he asserts that Airol was the only satisfactory one he had made use of. His experience covers nearly three years in almost all operative and other wounds. (*Deut. Med. Wochensch.*, Vol. XXV, page 10.)

Dr. M. Eberson of Tarnow, Austria, has published an article "Upon Airol" in which he has made good use of it as a surgical dressing as well as for perineal ruptures after childbirth. He claims better results than with any other antiseptic. He uses limited quantities and first dusts it on lightly, then places a layer of Airol gauze on top, after

which an ordinary sterilized gauze completes the dressing. (*Therap. Monats.*, Vol. XIII, page 31.)

Amyloform—the patented substitute for Iodoform formed by the combination of Formaldehyde with Starch—has received very meagre attention in the literature of the year.

Dr. A. Heddaeus, of Heidelberg, Germany, seems to be the most prominent observer at this time. He has published his results in a paper entitled "Clinical Experiences with Two Iodoform Substitutes—Amyloform and Iodoformogen." He finds the former a valuable antiseptic in superficial suppurative wounds. It does not irritate and no ill effects are noticed after extensive applications. (*Muench. Med. Wochensch.*, Vol. 46, page 379.)

Anæsthesia as a topic for discussion of much interest and importance has been constantly before the medical profession throughout the past year. The little flurry among some surgeons who were advocating a certain mixture has quite passed off, but a new substitute for the petroleum-ether element has constantly been sought for.

Dr. Horatio C. Wood, Jr., of Philadelphia, Pa., has carried on some experiments on animals with the mixture of ether, chloroform and benzene (the so-called petroleum-ether). He has published his results under the title of "Benzine in Anaesthetic Mixtures" (*Phila. Med. Jour.*, Vol. 3, page 843.) He remarks that "clinical reports are, however, in such matters, notoriously deceptive, because each anaesthetizer sees a number so comparatively small that chance may give one man always favorable results, while another will find in the new anaesthetic nothing to encourage." He then makes a very convenient table of the clinical reports he finds throughout the American literature, and draws some final deductions stating that in the light of its action on the lower animals his conclusion would be that benzine is a dangerous component.

Dr. Henry J. Garrigues, of New York city, who was one of those enthusiasts who recommended the new mixture for

general use has now felt it his duty to inform the profession that he feels called upon to change his opinion in regard to its safety. He bases the reason for his change of opinion on five cases of dangerous respiration among a little more than a hundred of his patients to whom Schleich's mixture was given. He therefore does not feel warranted in using it again in spite of all its excellent qualities. (*Med. News*, Vol. LXXIV, page 27.)

Dr. Willy Meyer, of New York city, has now found a new third ingredient for the new anaesthetic mixture, based on the Schleich principle of action. He has continued to make use of his so-called molecular solution of chloroform and ether (proportion of 43.25 per cent. by volume of chemically pure chloroform and 56.75 per cent. by volume of absolute ether), but found the boiling point still too high. He sought a third ingredient and finally settled upon ethyl chloride in the following proportions for the ingredients: 83 per cent. by volume of the above chloroform and ether mixture and 17 per cent. by volume of ethyl chloride. This it is claimed makes a clear liquid of very agreeable odor. He admits that this new mixture must be given by the drop method, thus giving evidence that care must be used in the administration. This care, it is rightly claimed by the skeptical, should be exercised with any and all anaesthetic mixtures.

Dr. August Bier, of Kiel, Prussia, has contrived a new device for producing anaesthesia. He makes use of lumbar puncture by the well-known Quincke's method after first locally anaesthetizing the part by Schleich's infiltration. He then injects into the spinal cord sac a dilute solution of cocaine in small quantity. This produces apparently a complete analgesia below that point, coming on in about ten minutes after injecting. He has even been able to perform major operations with practically no pain, and the patient loses neither the sensation of touch or of temperature. He has experimented upon himself and his co-worker and re-

ports that the only unlooked for result has been a slight loss of the cerebrospinal fluid. (*Deut. Zeitschr. für Chirurg.*, Vol. 51, page 361.)

Those who desire to keep track of the different forms of inhalers will be interested in the simple inhaler for the combined administration of gas and ether, recommended by Dr. Charles H. Peck, Attending Surgeon to the French Hospital, and will not only read what he claims for it but see an illustrative cut in the *N. Y. Med. Journ.* (Vol. LXIX, page 724).

Aneson (Tri-Chlor-Pseudo-Butyl-Alcohol) or Acetonchloroform is a local anaesthetic which is now brought forward as a substitute for cocaine. It is not really new but was more or less discarded for the reason that it was insoluble in water. After this objection was overcome, it was found that the soluble product now offered could be made up into 1 or 2 per cent. watery solutions, which upon trial, were found to be equal in anaesthetic effects to a 2 or $2\frac{1}{2}$ per cent. solution of cocaine. Such solutions are reported to be stable. It is less toxic than the other well-known local anaesthetics.

Dr. Mosbacher, of Bochum, Prussia, publishes the results of his trials. (*Muench. Med. Wochensch.*, Vol. 46, page 81.)

Dr. Friedr. Göppert, of Breslau, Prussia, has applied it in the form of a solution as a local sedative in painful mouth affections of children. The anaesthetic effects lasted about an hour and a half when applied to the inflamed mucous membrane on a cotton wad. (*Jahrbuch für Kinderheilk.*, Vol. XLIX, page 101.)

Antinosin (Sodium salt of Tetra-Iodo-Phenol-Phthalein) still receives prominent consideration in eye, ear, nose and throat affections, and probably those specialties may be classed as the chief field of its usefulness during the past year.

However, Dr. Wm. D. H. Brown, of Chicago, Ills., reports four cases of varicose ulcers of the leg showing rapid im-

provement under the use of this agent and its allied product, Nosophen. (*Tri-State Med. Journ.*, Vol. VI, page 285.)

Dr. R. F. Amyx, of St. Louis, Mo., has used it in the treatment of enuresis, cystitis and urethritis. He reports on three cases. (*N. Y. Med. Journ.*, Vol. LXIX, page 779.)

Antipyrin (Phenazone) is too wide spread in its use to make any systematic attempt to catologue what has appeared in the literature of the year. Some of the prominent observations however may be mentioned.

Dr. J. Comby, of Paris, France, has made good use of Antipyrin and arsenic in severe cases of chorea. He claims that Antipyrin should be given in large doses three or four times a day to have its best effect. As high a limit as 500 milligrammes (about 8 grains) a day for a one-year-old child can be reached, but not exceeded. This should not be given at once but by gradually increasing. He recommends the following formula to be given a ten-year-old child:

Antipyrin .....15 grammes (about 231.5 grains)
Syrup of Orange Peel. 40 " (" 617.3 ")
Distilled Water .....200 " (" 7 ounces)

(*Archiv. de Méd. des Enfants*, Vol. II, page 193).

Dr. Ulisse Francini reports satisfactory results in the treatment of menstrual epilepsy after using a mixture of 325 milligrammes (5 grains) of Antipyrin and 130 milligrammes (2 grains) of sodium carbonate three or four times daily. He had previously treated such a patient with bromides unsatisfactorily, but obtained good results with the Antipyrin mixture by beginning a few days before the expected period. It was then for the first time in five years that the period passed without the epileptic symptoms. His treatment was continued at subsequent periods with like favorable results. (*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 367.)

Reclus recommends the following ointment in the treatment of suppurating burns:

Antipyrin	5 grammes	(77.2 grains)
Boric Acid	5 "	(77.2 ")
Iodoform . . . .0.5 to 1	"	(7.7 to 15.4 ")
Vaselin 40	"	(617.3 ")

(*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 384).

Dr. Alfred Fournier, of Paris, France, has reported on three cases of unusual eruption due to Antipyrin. It made itself evident in one case of eruption in the form of dark blotches in the skin of the penis, at times with swelling which appeared four and a half hours after the initial dose. The patients naturally were alarmed as they immediately expected gangrene to follow. The eruption subsided when the Antipyrin was discontinued. (*Ann. de Derm. et de Syph.*, Vol. X, page 371.)

As has long been known, Antipyrin has its dangers. In this connection Dr. Gaston Graul, of Würzburg, Bavaria, has carried on a series of experiments on himself. He administered to himself 1.0 gramme (15.4 grains) of Antipyrin and 0.09 gramme (1.5 grains) of caffein and citric acid, the mixture being in the form of the so-called "migrainin." He inflicted this upon himself for over a week. He describes his feelings which will be interesting to those who are following up this line of its action. Some cases of whooping cough in von Leube's Clinic in Würzburg showed convulsive attacks and stupor after administering this agent, which immediately disappeared on discontinuing. (*Deut. Med. Wochensch.*, Vol. XXV, page 44.)

Antipyrin Tannate has been suggested as having some advantages over pure Antipyrin, especially in administering to children, for it is almost tasteless. Its preparation is accomplished by dissolving separately 3.2 grammes (50 grains) of Antipyrin and 1.88 grammes (28½ grains) of tannin in 10 Cc. (162 minims) of water. The two solutions are mixed and Antipyrin Tannate is formed as a white precipitate which is filtered and dried at a gentle heat. The resulting powder is yellow, insoluble in water, but readily

soluble in alcohol. The equivalent of Antipyrin in the mixture is 37 per cent. (*Chem. and Drug.*, Vol. LV, page 334.)

Antitoxins as a topic of medical discussion and research is probably one of the most widespread of any throughout the past year. Their importance is rapidly becoming recognized and the skeptics grow fewer and fewer. It is less the habit now to claim extravagant results, and therefore whatever may be said on this topic is more worthy of attention, for more rational statements are now being made than even in the previous year.

Dr. Louis Cobbett has contributed some of his results from the Pathological Laboratory, of Cambridge, England, in the form of a report on "The Origin of Antitoxin; Is it Present in the Blood of some Normal Animals?" He divides his report into six different heads:

"I. The Mode of Action of Antitoxin."
"II. The Origin of Antitoxin."
"III. Is Antitoxin present in the Blood of Normal Animals?"
"IV. The Presence of Diphtheria Antitoxin in Normal Human Serum."
"V. The Presence of Diphtheria Antitoxin in the Serum of certain Normal Horses."
"VI. Is the Power of Neutralising the Action of Diphtheria Toxin which the Serum of some Normal Horses possesses due to the Presence of Antitoxin?"

In opening his first head he states that "the fundamental question whether it is a bacterial product or a secretion of the cells of the living animal is not yet disposed of." In concluding his second head he states that it remains yet undecided whether Antitoxin is formed out of its corresponding toxin or is an independent product of the animal organisms, although the balance of evidence seems to favor the latter hypothesis. In concluding his third head he

makes the statement that so far "we have not seen the presence of Antitoxin demonstrated in the blood of any normal animal." In carrying out the experiments reported under his fifth head he had examined the serums of fourteen horses and concludes that his results "merely confirm previous experience and show that the serum of many apparently normal horses possesses the power of neutralising the action of diphtheria toxin, both when mixed with it *in vitro* and when the two are injected separately into the animal's body." In concluding his sixth head he reports as follows:

"But if it be granted that the serum of certain horses which have never been subjected to any process of immunisation contains true diphtheria Antitoxin it by no means follows that this is a normal constituent of these animals; indeed, the fact that it is absent in a considerable number is opposed to this conception. On the other hand, I understand that horses are not known to suffer from any affection caused by the diphtheria bacillus. Nevertheless, this micro-organism may affect them in some way not yet discovered, or may perhaps partially immunise them while growing as harmless parasites in some portion of the alimentary canal. The presence of Antitoxin in these animals cannot therefore be held to throw any light on the origin of that substance.

"It is well known that the value of different horses for the purpose of yielding diphtheria Antitoxin varies enormously. If any method of selecting the right animals at the commencement of immunisation were known much time and work would be saved. One therefore asks whether the suitability of a horse for this purpose has any relation to the presence or absence of Antitoxin in the blood before any treatment is begun. To this question Meade Bolton gave a negative answer. My own experience is not yet sufficiently advanced to warrant any expression of opinion. But the matter is being now worked out by Dr. Dowson

and myself and we hope shortly to make some communication about it." (London *Lancet*, Vol. II, for 1899, page 332.)

In a statement made here last year relating to the failure to establish definite tests for diphtheria Antitoxin, it seems to have been inferred rather than directly stated, that Dr. C. T. McClintock, of Detroit, Mich., was a skeptic as to the value of Antitoxin. If this impression has taken hold of any readers, it is only fair to contradict it here as he was only skeptical of the worthlessness of the tests, and not of the value of the agent itself.

Statistics in regard to the value of diphtheria Antitoxin continue to accumulate and demonstrate its almost uniform success. Probably the most valuable records come from Boards of Health in various parts of the whole world, and thus the element of bias is minimized. The New York Board of Health is probably one of the most active in this line of investigation as in many others, and therefore the report made by Dr. Hermann M. Biggs, of New York city, which brings his results up to February, 1899, when he read his paper on "The Serum-Treatment and its Results," before the New York Academy of Medicine on February 16th last, is well worth attention. The investigations of the Board of Health have been carried on in relation to other affections than diphtheria, but he is obliged to conclude that "when the curative treatment is considered, in only one disease can it be said that serum-therapy has afforded us a perfectly satisfactory method of treatment, that is in diphtheria. In all of the others all of the practical problems remain as yet unsolved, but in some there is a reasonable prospect of an early solution." (*Med. News*, Vol. LXXV, pages 97 and 137.)

A contribution well worth the consideration and careful study of those who still waver in their belief that there is any benefit in the use of diphtheria Antitoxin, is that of Dr. E. W. Goodall, of the London (England), Metropolitan Asylums Board, "On the Value of the Treatment of Diph-

theria Antitoxin." (*Brit. Med. Journ.*, Vol I, for 1899, pages 197 and 268.)

Most observers seem to note the importance of the early use of the Antitoxin, particularly in diphtheria, but occasional cases are reported where its value has proved of service after late injections. Dr. A. M. Daldy, of Kingston-on-Thames, England, publishes in detail a case illustrating in a very striking manner the value of diphtheria Antitoxin injected even as late as the eighth day of the illness. (*Brit. Med. Journ.*, Vol I, for 1899, page 338.)

Dr. Louis Cobbett, of Cambridge, England, has reported "The Result of the Treatment of Diphtheria by Antitoxin in London, Compared with that in Paris and Berlin," which deserves attention from those who are keeping track of the statistics. Four clear descriptive charts are given showing the remarkable fall in the annual total number of deaths from diphtheria since the introduction of the serum treatment. (London *Lancet*, Vol. II, for 1898, page 1457.)

A great reduction in the rate of mortality from diphtheria after the use of this agent continues to be reported not only from the United States and England, but from Germany, France, Russia and Switzerland, embracing a large variety of geographical conditions under which the treatment was carried on.

The study of immunizing doses of diphtheria antitoxin is being carried on to some extent, and a report now comes from the Children's Hospital, at Washington, D. C., showing the results there. Dr. Samuel S. Adams of that city reports his results in the *Archives of Pediatrics* (Vol. XVI, page 409). He found that the average duration of immunity in 17 cases was 51.1 days. These 17 contracted diphtheria and received Antitoxin in curative doses. He seems to be justified in asserting that the larger the immunizing dose the longer the duration of the immunity. The only pathological effect noticed was urticaria in two cases.

In the same number of the above Journal (on page 428),

Dr. Ward B. Whitcomb, of Batavia, N. Y., reports on the administration of Antitoxin by the mouth for the purpose of immunization. The results were extremely satisfactory in the two cases in which it was administered, and the exposure is reported to have been extreme.

Dr. John Zahorsky, of St. Louis, Mo., also believes in the benefit derived from diphtheria Antitoxin when given by the mouth for immunizing purposes. He admits that it is absorbed far more readily subcutaneously, but by the mouth it enters the general circulation soon enough to be of much value as a prophylactic. He has observed that about thirty-six hours is needed for complete absorption when taken by the mouth. (*Archives of Pediatrics*, Vol. XVI, page 171.)

Dr. Charles Bolton, of Homerton, London, N. E., England, reports on "The Complications of the Serum Treatment of Diphtheria" in 100 hospital cases which is worthy of consideration. He remarks: "In conclusion, one may say that the complications of Antitoxin are at times very painful and inconvenient but quite harmless, the only exception being the case in which sloughing occurred, and in that case the child was in an exceedingly bad condition as the result of scarlet fever and diphtheria combined, when the Antitoxin was administered." (London *Lancet*, Vol. I for 1899, page 891.)

Dr. F. J. Woollacott also of Homerton, London, N. E., England, reports on "Diphtheritic Paralysis in Cases Treated with Antitoxin," and states that the results seem to show that by this form of treatment in the London Fever Hospital "the death-rate has fallen while the paralysis rate has risen." (London *Lancet*, Vol. II for 1899, page 561.)

Dr. Theodore J. Elterich, of Allegheny, Pa., has made "A Report of twenty-five cases of Laryngeal Diphtheria Treated by Antitoxin and Intubation." His mortality was 20 per cent. (*Archives of Pediatrics*, Vol. XVI, page 344.)

In contradistinction to the large proportion of medical

practitioners who favor and report satisfactory results from the use of Antitoxin, it may be of interest to some to know where to look for the arguments and reasoning of a skeptic. Therefore the reader is referred to the somewhat extended remarks of Dr. Adolph Rupp, of New York city, to be found in the N. Y. *Med. Record* (Vol. 54, pages 661 and 946) and again in (Vol. 55, page 121.)

Dr. J. Edward Herman, of Brooklyn, N. Y., also has something to say on "The Other Side of the Antitoxin question" in the form of a paper read before the Brooklyn Pathological Society on February 9th last. (N. Y. *Med. Record*, Vol. 55, page 348.) He again writes and reads before the same society on April 13th, an article on "The Failure of Antitoxin in the Treatment of Diphtheria." (N. Y. *Med. Record*, Vol. 55, page 739.)

The antipathy is so strong against the use of this agent characterized as "a dirty animal product," not only among some physicians but even among the laity that a more convincing argument appears to be necessary to convert them. Dr. M. A. Veeder, of Lyons, N. Y, has written a short note to the editor of the *Medical Record*, suggesting a new line of presenting the subject to the patients and parents. After giving a few preliminary reasons he states that he "has quite fallen into the habit of calling the serum the diphtheria preventive when talking to patients, instead of using the much more formidable and confusing term Antitoxin. In short, just as soon as it is explained that it is a preventive and not an antidote the thing goes very much better." (N. Y. *Med. Record*, Vol. 54, page 671.)

The statistics of most value are rightly looked for from hospitals, institutions, boards of health and the like where a large number of cases are available. Therefore little of value can be expected in the line of statistics from the general practitioner, and naturally little is heard from him in the way of reports. As the beneficial results become more convincing, however, it may be expected that general

practitioners will report more frequently. It may be of some little service then to report here that Dr. Palmer Heath Lyon, of New York city, read a paper before the Washington Heights Medical Society on March 30th last, on "Diphtheria: The Serum Treatment in General Practice." He reports on five cases and concludes as follows: "Let me call attention to the fact that while the disease is usually quickly terminated by this most valuable remedy, unfortunately after-effects may follow, as is so often the case with other and far less successful treatments. I am glad to say that in the cases cited such has not been the history." (*N. Y. Med. Journ.*, Vol. LXIX, page 777.)

Probably next to diphtheria, tetanus would follow in the frightful mortality already reported. The antitetanic serum treatment has already considerably diminished the mortality, but it is fully as important as in diphtheria, if not more so, that the injections be made early. The results have not been as encouraging as in the treatment of diphtheria, and therefore it may be profitable to report some of the encouraging cases for statistical purposes, if for no other.

Dr. T. E. Taylor, of Denver, Colo., read a paper before the Colorado State Medical Society on June 20th last, in which he reported one grave case of tetanus from which there was an interrupted recovery. (*Med. News*, Vol. LXXV, page 42.)

Dr. E. Tavel, of Bern, Switzerland, has been experimenting with antitetanic serum for some years past, and now reports that he has obtained a satisfactory article not from a dog, from which he first obtained it, but from a horse and that this has kept well and remained potent for a year. He placed it in the hands of several medical practitioners who tried it in ten cases, seven of which recovered slowly after some weeks. He points out that this contrasts favorably with another report made about the same time of eleven fatal cases out of thirteen where Antitoxin was not made

use of. (*Correspondenz-Blatt für Schweizer Aertze*, Vol. XXIX, pages 193 and 235.)

Mr. Stanley Copley, of Camberwell, London, S. E., England, reports on the treatment of four cases of traumatic tetanus with Antitoxins. He concludes his report as follows: "In two of my cases which recovered, the infected part was amputated; in the third, the ulcer was scraped and cauterized with fuming nitric acid; in the fatal one, the edges of the wound were excised, together with a metacarpal bone, and the wound cleansed with formalin solution (1 in 80)." (*Brit. Med. Jour.*, Vol. I for 1899, page 337.)

Dr. F. K. Kleine, of Dr. Quincke's Clinic at Kiel, Prussia, reports two cases of traumatic tetanus cured with Behring's Antitoxin. (*Deut. Med. Wochensch.*, Vol. XXV, page 21.)

A fatal case of acute tetanus treated with Antitoxin is worth recording here, for it is a well-known fact that often much is learned from bad results, if sufficient detail be given. This case was reported from the Middlesex Hospital, England, under the care of the surgeon of the hospital, Mr. Andrew Clark. He states that the Antitoxin appeared to have no effect whatever in this case. (*Brit. Med. Journ.*, Vol. I for 1899, page 17.)

A case of acute tetanus successfully treated is reported by Mr. J. Galletly, of Bourne, Lincoln County, England. He concludes his report by stating that it "is so commonly followed by a fatal result that I think this case worthy of record in helping to form an opinion as to the usefulness of antitetanin; for, with the exception of a few doses of bromide of potassium and chloral hydrate during the first two days, and an occasional aperient, no drug was administered." (*Brit. Med. Journ.*, Vol. I for 1899, page 401.)

Dr. William M. James, of Whitesboro, N. Y., reports a case of tetanus of nineteen days' duration being successfully treated with Antitoxin. He concludes as follows: "In the past thirty-seven years as a practitioner I have seen and treated nearly thirty cases of tetanus, employing a great

variety of methods, but have always seen fatal results until this last experience." (N. Y. *Med. Record*, Vol. 56, page 372.)

Dr. C. L. Fraser, of Berwick-on-Tweed, Scotland, reports a severe case of traumatic tetanus successfully treated with Serum. (London *Lancet*, Vol. II for 1899, page 553.)

The treatment of tetanus by cerebral injections has been pushed quite energetically during the past year, and all the favorable cases are eagerly looked for.

Dr. George G. Rambaud, of Columbia University, New York city, has reported on this line of investigation, and gives "A Résumé of Reports of Cases and a Few Remarks on the Technique of the injection." His results were not very encouraging but much is to be learned from the details of his report. (*N. Y. Med. Journ.*, Vol. LXVIII, page 884.)

Dr. Charles A. Church, of Passaic, N. J., reports on the "Treatment by Trephining and the Intracerebral Injection of Antitetanic Serum." His case was the so-called Delaware Water Gap case of some notoriety throughout the medical world at that time, in which a favorable result followed. (*N. Y. Med. Jour.*, Vol. LXVIII, page 888.)

Dr. L. Ombrédanne reports on "A Case of Tetanus Treated by the Intracerebral Injection of Antitoxin" resulting in marked success. He accompanies this form of treatment with subcutaneous injection of Antitoxin, claiming to thus diminish or possibly arrest the further development of toxin in the blood. (*Presse Méd.*, Vol. 6, second half, page 132.)

Dr. G. Julliard, of Geneva, Switzerland, reports a case of traumatic tetanus treated by injections of antitetanic serum, which proved fatal and explains that his failure may have been due to a miliary tuberculosis, which proved by *post mortem* examination to have been present. (*Rev. Méd. de la Suisse Rom.*, Vol. XIX, page 279.)

At the meeting of the Paris Surgical Society on November 16th last the subject of the treatment of tetanus by intracerebral injection of Antitetanic Serum was under dis-

cussion, and reports were made by Dr. F. Hue, of Rouen, France, and Drs. Quénu, Lucas-Championnière, Reclus, Chaput, Richelot, Hartmann, Nélaton and Peyrot with very varying results, mostly unfavorable. (*Sem. Méd.*, Vol. 18, page 471.)

A report comes from the Darlington Hospital (England), of a case of tetanus treated by intracerebral injection of Antitoxin with recovery. The successful issue of the case is reported to have been largely due to the zeal and thoroughness of the attending house surgeon, and to the excellent and untiring nursing the patient received. (*Brit. Med. Journ.*, Vol. I for 1899, page 1333.)

Dr. Thomas D. Gimlette, Surgeon of the Royal Navy, reports a case of intracerebral injection showing "steadily progressive and perfect recovery." (London *Lancet*, Vol. II for 1899, page 89.)

Dr. William F. Gibb, of the Paisley (Scotland) Infirmary, reports a case of tetanus treated by intracerebral injection in which there was a good recovery. (*Brit. Med. Journ.*, Vol. I for 1899, page 895.) He, however, finally reported (*Brit. Med. Journ.*, Vol. II for 1899, page 9) the sequel to this case: "After the disappearance of all symptoms of tetanus, the patient again became seriously ill and died on May 5th, more than eight weeks after the last intracerebral injection. The results of the *post-mortem* examination leave but little doubt that the fatal termination of the case was directly due to the particular method of injection employed." The whole history of this case is worthy of careful reading.

Dr. D. Semple, of Netley (England) Army Medical School reports a case of intracerebral injection followed by recovery. "The advantage of giving the Antitoxin hypodermically in addition to intracerebrally" was evident in this case. (*Brit. Med. Journ.*, Vol. I for 1899, page 10.) Dr. James Watson, of Nottingham, England, expressing himself much interested in Dr. Semple's case, wrote to the editor of the *Brit. Med. Journal* (Vol. I for 1899, page 324)

that he would like to "suggest simplification of the operation for intracerebral injection." A peculiar kind of trocar-like drill is employed.

Dr. Albert Kocher, of Bern, Switzerland, reports on "A Simple Method of Trephining for Intracerebral Injections" and presents a cut of the instrument. He records a remarkable case which recovered after operation, but he would not state definitely that the recovery was due to either the intracerebral or the intravenous injections which he employed, for the patient might have recovered without the use of either. (*Centralblatt für Chirurg.* Vol., 26, page 643.)

A communication was made to the Lyons Society of Medical Sciences by Dr. Etienne Martin at a meeting in November last reporting the injection of Antitetanic Serum by lumbar puncture with a large trocar. Although the case was fatal the surgeons observing the results stated that they would repeat that practice in a similar case if it should occur, but immediately after the infection. (*Lyon médical*, Vol. LXXXIX, page 377.)

The treatment of snake-bite has been of increased interest throughout the year and some advance has been made in its treatment by Calmette's Antivenene. A series of experiments with the Antivenomous Serum has been carried on at the Netley (England), Army Medical School by Drs. D. Semple and G. Lamb, and they now report the details of their observations as to "The Neutralizing Power of Calmette's Antivenomous Serum: Its Value in the Treatment of Snake-bite." (*Brit. Med. Journ.*, Vol. I for 1899, page 781.)

At the annual meeting of the British Medical Association in Portsmouth last August, Mr. O. W. Andrews, Surgeon in the Royal Navy, read a paper "On the Preparation and Use of Calmette's Antivenene" in which he reports on twelve series of experiments carried on with much detail and care. In the discussion which followed, Dr. K. Macleod of Netley, England, stated "that it was an interesting physi-

ological and valuable practical fact that it was only the excess of snake poison in the blood that had to be dealt with. The fluids of the body could themselves deal with and neutralize a certain amount of the venom of snakes, and as only the excess had to be dealt with, a smaller dose than experiment would seem to indicate was all that was required." (*Brit. Med. Journ.*, Vol. II for 1899, page 660.)

It may be interesting to put on record here in this connection the old-fashioned Bibron's antidote to the poison of the rattlesnake:

Potassium Iodide	260 milligrammes	(4 grains)
Corrosive Mercury Chloride.	130 "	(2 ")
Bromine	20 grammes	(5 drachms)

Ten drops of this mixture was diluted with 15 to 30 grammes (1 to 2 tablespoonfuls) of wine or brandy.

Dr. C. J. Martin, Professor of Physiology in the University of Melbourne, Australia, has published a rejoinder to Dr. Calmette in relation to "The Curative Value of Calmette's Antivenomous Serum in the Treatment of Inoculations with the Poisons of Australian Snakes." In his concluding remarks the following expression occurs: "It is a matter of regret that I am unable to agree with M. Calmette concerning the value of his serum. Moreover, I am far from considering the test I subjected it to as too severe; but, on the contrary, I fear it was not sufficiently so, as I used in my first experiments only just over one fatal dose of the poison." In still further expressing his doubt as to the advantage of Calmette's Serum, he goes on to state "at the same time, I should be the last to fail to appreciate that M. Calmette's production of antitoxin is the outcome of pure enthusiasm for science and humanity. The tiresomeness, expense, and great patience required to produce a serum of any considerable antitoxic power against snake venom I know from personal experience, and I can only congratulate M. Calmette on having shown that it was possible to do this, and on having gained some measure of success. I doubt not

that he will soon succeed in procuring a serum possessed of greater potency, and I assure him that I shall be delighted to hear of his success, and to do what may be in my power to encourage its use in Australia." (*Brit. Med. Journ.*, Vol. II for 1898, page 1805.)

Experiments on the Antitoxic treatment of typhoid fever have been continued during the past year, but not with very striking results.

Dr. V. Jez, of Vienna, Austria, has made use of a so-called Antityphoid Extract obtained from guinea pigs inoculated with typhoid bacilli. He reports on his mode of procedure in the eighteen cases in which he employed it. He found that by administering it by the mouth he obtained better results than by subcutaneous injections. His results are well worth consideration and the trials should surely be repeated. (*Wien. medicin. Wochensch.*, Vol. 49, page 346.)

A case of Malta fever is reported by Drs. E. D. Fitzgerald and J. Hoggan Ewart, of Folkestone, England, as having been treated with Malta Fever Antitoxin. The patient recovered and has since reported that he feels perfectly well and strong again. This particular Antitoxin appeared to be known only to a few in England at that time and had to be obtained specially from the Army Medical School at Netley where some fifty cases were being treated with it. (London *Lancet*, Vol. I for 1899, page 1024.)

Much discussion has been going on recently, but particularly between two notable observers, in regard to the discovery of the so-called yellow-fever bacillus.

A report has already been made by the Commission of Medical Officers of the Marine Hospital Service to investigate the cause of yellow fever. An abstract of this report will be found in the *N. Y. Med. Journal* (Vol. LXX, page 299.)

Dr. Alvah H. Doty, Health Officer of the Port of New York, has been much interested in this line of investigation

and has carried on some important experiments in the treatment of yellow fever. Most practitioners are familiar with his first important case. The Serum used was produced in the Laboratory of the Health Officer and much general interest was taken in the results of its administration. Dr. Doty has made a full report of the case, and gives the proper amount of emphasis to his somewhat gratifying results, but lays due stress upon the fact that one case proves nothing, and states that the work already begun will be continued until a definite conclusion is reached. (N. Y. *Med. Record*, Vol. 56, page 289.)

The treatment of pulmonary tuberculosis by an Antituberculous Serum has received some attention during the past year.

The most extensive and energetic workers in the preliminary steps for such treatment have been Drs. E. L. Trudeau and E. R. Baldwin, of Saranac Lake, N. Y., who have published the results of their "Experimental Studies on the Preparation and Effects of Antitoxins for Tuberculosis." The introductory sentence to their report reads as follows: "The workers in this field have not been idle, though it must be conceded that few definite good results have been attained, and but little progress has as yet rewarded the patient toil expended in attempts to produce a curative or antitoxic serum for tuberculosis." Their studies embrace a period of four years' work on 4 sheep, 3 asses, 12 fowls, 18 rabbits, and 450 guinea pigs, and their results are given in a concluding summary which will be interesting to read. (*Amer. Jour. of the Med. Sciences*, Vol. CXVI, page 692, and Vol. CXVII, page 56.)

At the meeting of the British Royal Medical and Chirurgical Society, on March 28th last, Drs. C. Theodore Williams and Herbert Horrocks read a paper on "The Treatment of Pulmonary Tuberculosis by Antituberculosis Serum." Their experiments were carried out on nine patients at the Brompton (England) Hospital, using the Serum

obtained from the Jenner Institute of Preventive Medicine. The report states that "all increased in strength and vigor, and were able to return to their work, except one patient, in whose case a lighter occupation was substituted for a comparatively trying one." These results cannot be accepted as conclusive, but will undoubtedly encourage further trials. (*Brit. Med. Journal*, Vol. I for 1899, page 790.)

A case of diphtheritic conjunctivitis treated successfully with Antitoxin is reported by Dr. George Huston Bell, of New York city. (N. Y. *Med. Record*, Vol. 55, page 814.)

Another case is reported by Dr. Charles P. Pinckard, of Chicago, Ills., in which recovery followed without danger to the eye. He states in conclusion that "while diphtheritic conjunctivitis seems to be rather common in Europe, it is an exceedingly rare disease in America. There have been a large number of cases reported in Germany and France as successfully treated by antitoxin injections, but as far as the writer knows, this is the first successful case in this country." (*Journ. Amer. Med. Assoc.*, Vol. XXXII, page 1153.) Evidently Dr. Pinckard did not know of Dr. Bell's case.

The use of Antistreptococcic Serum in the treatment of small-pox has received some attention from Mr. W. J. Lindsay, of the Middlesbrough Isolation Hospital (England). He reports that he had an opportunity to treat a large number of patients suffering from every variety of variola during a small-pox epidemic. He reports on six of his cases and states the object of publishing his observations is to set forth his clinical facts, and to leave to others to make a more extended bacteriological inquiry in testing the value of this treatment. (*Brit. Med. Journ.*, Vol. I for 1899, page 1144).

Dr. V. Gilbert reported, in a communication to the Geneva Medical Society, on May 3d last, very brilliant results in the treatment of pertussis by administering An-

tidiphtheritic Serum. (*Revue médicale de la Suisse Romande*, Vol. XIX, page 373).

A report comes from the London (England) Temperance Hospital of a case of septicaemia treated with Antistreptococcic Serum in which there was evidently complete recovery. Dr. Leonard Wilde under whose care this was, remarks as follows:

"This case is interesting as belonging to a class of disease about which there has been considerable controversy as to the efficacy of serum therapy when employed as a germicide. It has not, I think, been claimed that Antistreptococcic Serum acts as an antitoxin as in the case of the Antidiphtheritic Serum, but merely that it possesses bactericidal properties which may be applied in certain cases with a rational expectation of success. Whether the patient recovered because of the administration of the serum or simply during such administration I have no desire to state, but the facts have been recorded as they occurred and those interested in the subject can form their own opinion. The difficulty of successfully applying the Antistreptococcic Serum rests on the fact established by Van de Velde that there are several races of Streptococci, none of which affords protection against the other, and until a serum has been obtained which includes the products of each race the success of the treatment will depend upon whether the organisms to be attacked are of the same race as those from which the serum injected has been derived." (London *Lancet*, Vol. I for 1899, page 373).

The treatment of leprosy with Antitoxic Serum appears to have been rather disappointing. The very striking results claimed by Dr. J. Carrasquilla, of Bogotà, United States of Columbia, S. A., evidently cannot be followed up, for the temporary benefit obtained is not lasting. Some experiments have continued more in the way of preliminary work, however, and a report by Drs. Akel and Ed. Soonetz,

of Dorpat, Russia, has followed. (*St. Petersburg Med. Wochensch.*, Vol. XXIX, page 141.)

Drs. F. Abba and G. Piccardi, of Turin, Italy, have reported in detail on a case of anthrax pustule treated with the Antianthrax Serum of Prof. Sclavo, with successful result. This case is reported to be the twenty-seventh which has been treated successfully with this Serum. (*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 360.)

Dr. W. Kolle, of Berlin, Germany, reports some statistics on the Serum treatment of rinderpest in South Africa. The mortality rate has been very high and he claims to have recoveries now amounting to some 86.1 per cent. These recoveries not only prove to be cured, but act prophylactically. He claims that satisfactory results will follow if the injections are accomplished within the first three days after the beginning of the fever. (*Berlin klinisch. Wochensch.*, Vol. XXXVI, page 520).

A pupil of Dr. Koch, Dr. Wassermann, has recently reported on the discovery of an Anti-Pneumonic Serum. Apparently little has been done in experiments in this line upon human beings, as most of the work has been accomplished on mice. Dr. Antonio Fanoni, of New York City, however, has been doing some of this work for at least two years and now publishes a "Report of Six Cases of Pneumonia Treated with Anti-Pneumonic Serum." This was read before the Italian Medical Society of the city of New York on June 22nd last. (*N. Y. Med. Journ.*, Vol. LXX, page 302).

Mr. Charles Stonham, of London, England, reported "A Case of Compound Separation of the Lower Epiphysis of both Radius and Ulna, followed by Acute Tetanus, treated with Tetanus Antitoxin and Irrigation of the Wound with Oxygen Gas without Recovery," from the Westminster Hospital. The following remarks on the case are made by Mr. Paton:

"This case appears to be worth recording, in the first place because of the infrequency of separation of the lower epiphyses of the radius and ulna, but more especially as a case in which the tetanus which supervened was treated with tetanus antitoxin, and this without any relief to the symptoms. The antitoxin treatment of tetanus is still on its trial, so that it seems advisable that as far as possible all cases, both successful and unsuccessful, should be recorded. It will, no doubt, be said by the advocates of the treatment that in such an acute case as this, in which the disease ran its course in about thirty-six hours from commencement to termination, no treatment is likely to be of any avail. On the other hand, it may be said with equal truth that the less acute the case is the more tendency there is for a spontaneous cure to result from the mere resisting power of the patient and thus a fictitious appearance of success may be given to any treatment, such as that by Antitoxin, which may have been tried, so that it may be argued with some reasonableness that the acuter the case the better test it will be of any form of treatment which professes to cut short the disease process. In the case of which the notes are given above, as far as could be seen, no relief to any of the symptoms resulted from the injections, while, on the other hand, they appeared to have no deleterious effect." (London *Lancet*, Vol. II for 1898 page 1326.)

Mr. Herbert W. Page, of London, England, in referring to Mr. Stonham's interesting case, states that it is more "in accordance with all that is known of the disease itself and of the behavior of Antitoxins in general to draw the conclusion that the Antitoxin of tetanus is more likely to succeed in warding off the disease altogether than in arresting or putting an end to it when the symptoms have developed—that really is to say when the mischief has been done." * * * "Immunisation against hydrophobia, a very similar malady, has long been above question. I would urge the like treatment in the case of tetanus whenever there is reasonable

ground for fearing that it may arise. I cannot help thinking that the Antitoxin will then be proved of greater value than the record of cases treated by it up to this time seems to warrant." (London *Lancet*, Vol. II for 1898, page 1432.)

Anytin, the interesting new substance reported here last year, has had little attention paid to it in the current medical literature of the year. It will be remembered that its solvent properties are very great, acting on bodies usually insoluble in water. The preparations made by dissolving such substances insoluble in water in Anytin have been called Anytols. The only report of any prominence made during the year was that of Dr. Wilhelm Koelzer, of Greifswald, Prussia. He has used Meta-Cresol-Anytol in the treatment of erysipelas. He evidently obtained prompt results. (*Deut. Med. Wochensch.*, Vol. XXIV, page 677.)

Argentamin (Ethylene-Diamin-Silver Phosphate) has received about the same amount of attention during the past year as in the previous year. Genito-urinary practitioners appear to be the most prominent users, but even from them little that is new is reported. Dr. Edwin Williams, of Memphis, Tenn., appears to be the only one to publish his results, in "A Clinical Report on a New Remedy in the Treatment of Gonorrhea," in which he gives a number of cases treated with solutions of Argentamin and hydrogen dioxide half strength. The hydrogen dioxide is injected first and then followed up by the Argentamin solution in strengths varying from 1 in 3000 to 1 in 2000. He recommends that only fresh solution be used. (*Memphis Med. Monthly*, Vol. XIX, page 316.)

Argonin, the bactericide formed by mixing Silver Nitrate with a combination of Sodium and Casein, is still before the profession with some gratifying results reported.

Dr. Edward S. Peck, of New York city, has followed up pretty closely the treatment of purulent ophthalmia in infants, with both Protargol and Argonin. He read a paper on the advantages of these agents before the Section on

Pediatrics of the New York Academy of Medicine, on December 8th last, and a discussion followed. (*Pediatrics*, Vol. VII, page 129.)

Dr. Johann Jellinek, of Buda-Pesth, Hungary, has written on a new preparation of Argonin called "Argonin L"—soluble Argonin. It was previously realized that considerable difficulty is experienced with Argonin because of its insolubility and its tendency to decompose. This new article is not only soluble in cold water but may be kept in solution for several months without decomposing. Again it contains 10 per cent. of silver in place of the 4.2 per cent. of the insoluble form. Dr. Jellinek uses a 1 per cent. solution for cases of urethritis. Both anterior and posterior cases of urethritis were treated with the soluble form, proving the superiority of the newer preparation. It is to be hoped that more particulars will be forthcoming as to its mode of preparation. (*Wien. Med. Wochensch.*, Vol. 49, page 210.)

Aristol (Di-Thymol-Di-Iodide) is still an important agent as a surgical dressing, and is now mentioned simply as an article used as a matter of course in suitable cases. It may not be known generally that good results have been obtained in Italy from its topical use in quite deep seated ulcerations in persistent ozaena, in the following combination: Aristol 1 part, Castor Oil 1 part, and Collodion 8 parts.

Again Dr. Robert L. Dickinson, of Brooklyn, N. Y., has made good use of it as an antiseptic dressing for the umbilical cord. (*Amer. Jour. of Obstet. and Diseases of Women and Children*, Vol. XL, page 14.)

Aspirin is a new so-called antirheumatic agent derived from the action of acetic anhydride on salicylic acid. It appears in the form of small, colorless and tasteless crystalline needles. It is almost insoluble in cold water, sparingly soluble in slightly warm water, but readily soluble in alcohol, ether and potash solution. It is slightly acid in reaction and if an acid be added to the potash solution, the

crystals again appear. From this fact it is known to act on the intestinal tract, for it remains unchanged when passing through the stomach. Salicylic acid and sodium salicylate are known to cause irritation in the stomach, and therefore this agent is recommended, for it passes on to the alkaline fluids further down in the digestive tract. The dose recommended is from 1 gramme (15.4 grains) upwards, given three times a day combined with 4 grammes (61.7 grains) of granulated sugar dissolved in a little water.

The cases in which it has proved successful are those of acute articular rheumatism. It is best to give it in the powdered form, for it is then practically tasteless. An alcoholic solution has a very disagreeable taste.

Dr. Julius Wohlgemuth, of Berlin, Germany, has been one of the most prominent observers to test its action, after describing it in an article by himself entitled "On Aspirin (Acetylsalicysäure)." (*Therap. Monats.*, Vol. XIII, page 276.)

Another prominent observer has been Dr. Kurt Witthauer, of Halle, Prussian Saxony, who used it in the Deaconess Hospital of that city. (*Heilkunde*, Vol. III, page 396.) Little further is known of it as yet.

Asterol is one of the newest antiseptics offered as a wound dressing. It is described as a double salt (brown in color) of Para-Sulpho-Carbolate of Mercury and Tartrate of Ammonium. It is similar to Hydrargyrol (Para-Sulpho-Carbolate of Mercury) except that the Ammonium Tartrate in Asterol renders Asterol soluble in warm water—a property greatly to its advantage. An additional advantage in this agent is that the watery solutions remain stable.

Dr. Fr. Steinmann, of Bern, Switzerland, has made some observations upon its value when compared with corrosive sublimate. He summarizes its advantages as follows: 1. Solubility in water—the solution remaining clear; 2. Its decided bactericidal properties even in albuminous surroundings; 3. Its non-irritability; 4. Its deep penetrating

power; 5. Its efficiency in disinfecting not only the hands and the surrounding parts of the wound but the instruments used, which latter are not at all affected by it; 6. Its comparative harmlessness in treating wounds antiseptically, although its toxic properties are equal to those of the other mercuric agents. (*Berlin klin. Wochensch.*, Vol. XXXVI, page 229.)

Dr. M. Vertun, of Berlin, Germany, has also compared it with corrosive sublimate but finds that it has so little advantage over it that he does not see the need of offering another agent. (*Berlin klin. Wochensch.*, Vol. XXXVI, page 432.)

Benzin (Petroleum Ether) is alluded to here simply to put on record what is claimed to be an extremely rare fatal case of poisoning. Mr. Frederick Spurr, of Commercial-road, East, London E., England, records the case as being worthy of mention, not only on account of its extreme rarity, but "also because in the few recorded cases which I have been able to find the symptoms and pathological action of the poison have varied so considerably that any fresh information on the subject should be of interest." (London *Lancet*, Vol. I for 1899, page 1488.)

Benzosol (Benzoyl Guaiacol) has received little attention in the medical literature of the year. There has been no prominent mention of it in rheumatoid arthritis, which was the affection alluded to here in this connection last year, but Dr. Julius L. Salinger, of Philadelphia, Pa., has made use of it in chronic pulmonary tuberculosis in the Jefferson Medical College Hospital. The routine practice of the hospital had been to treat such cases with creosote, but the well-known objections to creosote were so prominent that another agent was sought for and found in Benzosol. Dr. Salinger states that he does not make any attempt to claim a specific action for this agent, but does claim that it has all the advantages of creosote without its drawbacks. He states that the only known objection, if it can be called

an objection, is that it is more expensive than creosote. The cases most benefited were those in which besides pulmonary lesions there was gastro-intestinal symptoms. The diarrhea generally noticed was usually promptly relieved by its use. A table is given with the compact outline of 24 cases. (*Ther. Gaz.*, Vol. XXIII, page 150.)

Bromoform has not gained much in popularity during the past year, especially as the poisoning cases still continue, and even are considered by some as on the increase. Its particular use, however, is in the treatment of pertussis as heretofore. Various formulas continue to be offered containing different ingredients which are supposed to lend their aid. One not mentioned before is as follows: Equal parts of Bromoform, Tincture of Aconite Root, Tincture of Drosera, Alcohol and Glycerin, given in doses of 10 to 20 drops daily, according to the age of the child.

Another is recommended by Dr. J. Bernard: Bromoform, 1 part; Tincture of Aconite Root, 1 part; Alcohol, 20 parts; Syrup of Codein, 100 parts; Syrup of Tolu, 150 parts. The dose is 10 grammes (or 2 fluidrachms) 3 times each day.

Dr. A. Marfan now suggests a formula differing from the one alluded to last year, as follows:

Bromoform	48 drops.	
Almond Oil	20 grammes	(about 5 drachms).
Tragacanth	2 "	(about ½ ").
Acacia	4 "	(about 1 ").
Cherry Laurel Water.....	4 Cc.	(about 1 fluidrachm).
Distilled Water to make up to.	90 Cc.	(about 3 fluidounces).

The dose recommended is 4 drops for each year of the child's life distributed throughout the 24 hours. (*Hospital* of London, Vol. XXV, page 313.)

Dr. Moritz Cohn, of Hamburg, Germany, reports having used this agent in pertussis for the past six years, with very varying results. He claims that the uncertainty in

action may be due to the fact that the peculiar bacillus attributed to this affection is not always present in cases of whooping-cough. He disapproves of the manner of giving this agent in drop form, as he has found it to be unsafe. He recommends the following formula for administering it:

Bromoform	0.5	gramme	to	1.0 or 2.0	grammes.
Alcohol	5.0	grammes	to	10.0 or 20.0	"
Acacia	5.0	"	to	10.0 or 20.0	"
Syrup of Orange.	20.0	"			
Distilled Water..	100.0	"			

The dose given is 5 grammes (or 1 fluidrachm). He reports that the above emulsion keeps well. (*Therap. Monats.*, Vol. XIII, page 25.)

At a meeting of the Edinburgh Chemists' Assistants' and Apprentices' Association held on January 11th last, Mr. George Somerville contributed the following dispensing note on Bromoform and Creosote:

"A medical practitioner recently mentioned to the author that he had a difficulty in dispensing bromoform. There were three methods in use—(1) emulsification, which was unsatisfactory; (2) giving it in capsules or pearls, but for children this answered badly; (3) giving it in drops—this also was liable to error of overdose. After trying several plans, the idea occurred of dissolving the bromoform in glycerin. A most satisfactory formula, which has stood the test of time, was found to be the following: "Bromoform, 2.0 Cc., 90 per cent. Alcohol, 7.5 Cc., and Glycerin sufficient to make up to 30.0 Cc." It has been tried by several practitioners, and all express satisfaction. It has the advantage of mixing well with water, and many other drugs can be added without throwing the bromoform out of solution. Flavoring agents can also be added—an important requirement in the case of children. The foregoing remarks about bromoform apply equally in the case of creosote, and

an analogous formula has been found to work satisfactorily. Glycerin is frequently prescribed along with bromoform and also with creosote in whooping-cough, phthisis and certain types of indigestion, and there can therefore be no objection to its employment in the foregoing formula." (*Pharm. Jour.*, Vol. VIII, Fourth Series, page 69.)

A few of the poisoning cases of more recent date may be mentioned for the purpose of recording.

Dr. Müller, of Munich, Bavaria, reports a case and states that there are in all twelve cases published of poisoning by this agent. (*Muench. Med. Wochensch.*, Vol. 45, page 1211.)

Dr. Schmitt, of Dieburg, Hessian Germany, reports a case. (*Muench. Med. Wochensch.*, Vol. 46, page 149.)

A correspondent of the London *Lancet* writes to that Journal (Vol. II for 1898, page 1816) of a case of poisoning which occurred at Lancaster, England. It was then stated that the report was rather meagre and fuller particulars were asked for, as it was thought to be the first (?) recorded case of Bromoform poisoning. The *Lancet* alludes to this same case in a subsequent issue of its Journal, and the correspondent gives a further report of interest in the same direction. (London *Lancet*, Vol. I for 1899, pages 119 and 189.)

Dr. J. S. Stone, of Boston, Mass., contributes a note with the following heading: "Bromoform, Carbolic Acid, and Whooping-Cough—the Dangers of Each," in which he describes a case of a child to whom he prescribed a Bromoform mixture with unfortunate results. (*Boston Med. and Surg. Jour.*, Vol. CXL, page 160.)

Camphor production in this country is still being pushed, and encouragement comes from Florida, where the statement is spread by a resident that he is fully convinced that it can be profitably produced in the southern part of the state, for he has at this time several acres planted in Camphor trees of different sizes, to which he adds a number

each year. The trees appear to be hardy and are not easily affected by extremes of heat, cold, moisture or drought. No artificial fertilization is apparently called for. He describes his trees as being in some cases almost without any trunk, and even if they do possess a trunk, it is short and the branches are quite close to the ground. The tops form in rounded symmetrical cones. His success has encouraged his neighbors to plant to some extent, and no doubt a profitable industry will soon spring up, for the seeds germinate rapidly and the trees bear seed abundantly. This gratifying news of results at home is specially interesting at this time when word has come from Japan through the United States Foreign Office announcing a Japanese Camphor monopoly.

A little more attention has been given during the past year to the treatment of pulmonary tuberculosis by the use of Camphor.

Dr. Bruno Alexander, of Nervi-Reichenhall, after repeated trials, is very strong in his recommendation of the use of subcutaneous injections of camphorated oil in this affection. If the temperature is high, he injects subcutaneously 0.1 to 0.2 Cc. ($1\frac{3}{4}$ to $3\frac{1}{2}$ minims) of camphorated oil once a day for a protracted period, even to six weeks and without intermission, after which he advises an intermission of from one to four weeks before resuming the injections. In his cases he naturally uses the camphorated oil of the German Pharmacopoeia, which contains 10 per cent. of camphor, thus that equivalent of Camphor in this country would have to be injected to make the results parallel. (*Berlin. klin. Wochensch.*, Vol. XXXV, page 1062.)

Oxycamphor is the name given to a product obtained by chemically replacing one atom of hydrogen in Camphor for the radical HO. It is claimed that this product is free from the disagreeable heart action noticed when using Camphor. It has been given in doses as large as 500 milligrammes (7.7 grains), but it is found that it changes quite

rapidly, and therefore it has been recommended to make use of a 50 per cent. alcoholic solution, which has been given the name of "Oxaphor."

Dr. Richard Jacobson, of Berlin, Germany, has made use of this 50 per cent. solution in 18 cases of dyspnoea, using the following combination: Sol. Oxycamphor, 50 per cent., 1 part; Alcohol, 2 parts; Liquorice Water, 1 part, and Distilled Water sufficient to make 15 parts. The dose is 15 grammes (or ½ fluidounce) three times daily. It was found of value in pulmonary, cardiac and renal dyspnoea. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 339.)

Dr. Alfred Ehrlich has also made some observations with this agent in dyspnoea and as a sedative. He used the following formula:

Sol. Oxycamphor. Alcohol (50%)	2.00	grammes	(30.9 grains).
Alcohol	5.00	"	(77.2 ").
Syrup of Raspberry....	20.00	"	(308.6 ").
Distilled Water	175.00	"	(about 6 ounces).

The dose is 5 grammes (1 teaspoonful) two or three times each day. He treated 32 cases. All showed some good results, but the best were obtained in the dyspnoea present in pulmonary tuberculosis. (*Centralbl. für die gesammte Therapie*, Vol. XVII, page 1.)

Poisoning cases are occasionally recorded, particularly where criminal abortion is attempted. It has been discovered somewhat accidently that large doses of sugar act well as an antidote in such cases.

Camphor has been recommended by Dr. Julian Alvarez as an antidote for carbolic acid, and has published his report of a case of carbolic acid poisoning so treated. He discovered this antidotal action by accident, for after he had learned that carbolic acid had been swallowed, he at once presumed that it had all been absorbed and simply recommended camphorated oil to be given for the sake of

its soothing action on the oesophagus and stomach, but apparently it not only accomplished the result he looked for, but the patient recovered. (*Giornale Internaz. delle Scienze Med.*, Vol. XXI, page 81.)

Camphoroxol has not been heard of during the past year in the medical literature, but the combination it represents of camphor and solution of hydrogen dioxide would seem to be of some value in the cases last reported. Therefore observers may still be at work, to report later.

Captol, the proprietary combination of tannin and chloral, has not been alluded to in the medical literature, but only through the medium of advertisements.

Chinosol, the antiseptic, disinfectant, deodorizer and bactericide, is still being observed and somewhat pushed in the treatment of pulmonary tuberculosis.

Dr. Alexander MacGregor, of Queen-street, Berkeley square, London, W. England, reports clinically on six cases and states that from the observations which he has been able to make, he is convinced that it is a valuable drug in the treatment of this affection. (London *Lancet*, Vol. II for 1899, page 90.) To a query made by a correspondent, Dr. MacGregor wrote that he did not confirm the diagnosis of his cases by bacteriological search for the tubercle bacillus. He only made such examinations on the sputum in doubtful cases.

Chloretone is the name adopted for a new hypnotic and anaesthetic known chemically as Tri-Chlor-Butyl Alcohol (Acetonchloroform). This article differs from acetone chloroform, and therefore the investigators thought best to coin this new word Chloretone to avoid confusion. The investigators who have reported on it are Drs. E. M. Houghton, of Detroit, Mich., and T. B. Aldrich, of Baltimore, Md. They report that "it is formed when caustic potash is slowly added to equal weights of Chloroform and Acetone, and may be isolated from this mixture, after the removal of any excess of Acetone and Chloroform, by distilling with

steam. Obtained in this manner, it is a white, crystalline compound, having a camphoraceous odor. When freed from water by melting, and allowed to cool, the camphoraceous odor is more pronounced and its general appearance resembles Camphor more closely. It is very soluble in chloroform, acetone, strong alcohol, ether, benzin and glacial acetic acid, sparingly soluble in cold water (1 per cent.), more soluble in boiling water. Dilute acids and alkalies are apparently without effect; concentrated sulphuric acid decomposes it." . . . . . .

" The main action of the drug is confined to the central nervous system, it being essentially the same as that of the other anesthetics and hypnotics of the fatty acid series, differing from most of the members of this group in not depressing the circulatory system. Chloretone, besides its central action, possesses local anesthetic properties in a marked degree, resembling cocain in many respects. Indeed, it will probably be found a useful substitute for the last-named drug, as the small amounts introduced subcutaneously to produce insensibility to pain in surgical work are entirely harmless. Experiments *seem* to warrant us in making the statement that chloretone has a selective action for the central nervous system—more chloretone having been found in the brain in several instances than in any other organ of the body."

. . . . . .

" In general we may summarize our claims for this drug by stating that its action on the central nervous system is similar to the anesthetics and hypnotics of the fatty acid series without depressing the centers of the medulla; locally it acts like cocain, as a peripheral anesthetic. It is too early to prophesy what position chloretone will take in medicine, but the results as a hypnotic and local anesthetic are very encouraging." . . . . . .

"Possibly the drug will prove to be a useful general anesthetic when administered in large doses; or it may be given

before chloroform or ether and allow complete anesthesia to be produced by the use of a minimum amount of chloroform or ether. Perhaps such administration may prevent the annoying vomiting that so frequently occurs when a patient is being anesthetized. Chloretone is nearly an ideal anesthetic for use in experimental surgery, physiology, pharmacology, etc., as has been abundantly demonstrated by Abel, of Johns Hopkins, Cushny, of Ann Arbor, and our own experience in the laboratory for several years past."

. . . . . .

"We have nearly completed an exhaustive systematic investigation of the chemical and pharmacologic properties of chloretone, which will be published in detail in the near future." (*Jour. Amer. Med. Assoc.*, Vol. XXXIII, page 777).

Chloroform decomposition in the presence of a naked flame has received some marked attention from Dr. Kenelm Winslow, of Newton, Mass., owing to the decided poisoning effects noted. It does seem very strange that after so many years' use of Chloroform to produce anaesthesia under every variety of condition that the facts pointed out by Dr. Winslow are not more generally known. Cases of unlooked-for choking effects upon not only the patient on the operating table but upon those in attendance have been repeatedly reported, but comparatively few of these cases have ever received the proper explanation of such effects. The fact has been long known and pointed out repeatedly in print for many years past that Chloroform "rapidly decomposes when its vapor comes in contact with an exposed gas light, evolving peculiar chlorine vapors which are extremely irritating to all present and may be even dangerous to the patient. Chloroform, therefore, should never be administered by gas light unless the latter be well protected by a closed glass case and furnished with abundant provision for the rapid escape from the room of all decomposition products." Therefore it appears to be quite necessary to repeat here such precautions.

A recent allusion to Chloroform as a haemostatic has been made by Dr. Spaak, of Brussels, Belgium, due to his having obtained gratifying results by the application of a mixture of 1 part Chloroform and 50 parts water. He used it to control haemorrhage after the extraction of teeth. (*Journ. de médicine de Paris*, Vol. XI, page 271.)

Cinnamon, in the treatment of influenza is strongly recommended by Dr. Joseph Carne Ross, of Manchester, Engand, in the following report of his observations:

"The newspapers give us a dismal daily death-roll from influenza. My experience during the past five years leads me to believe that no patient, if promptly and systematically treated, need be on the sick list, even after a most severe attack, for more than five or six days at the very outside. The theory on which that treatment is based limits of space preclude me from at present discussing.

"The drug I employ is cinnamon, either in a strong decoction or in tabloid form. I order half an ounce of decoction of cinnamon, or two tabloids, every half hour for two hours; then the same dose to be continued every hour till the temperature falls to normal. After the temperature has become normal the same dose to be taken four times a day for four days; the patient not to leave the house for twenty-four hours after the temperature has become normal; the treatment must be commenced within twenty-four hours from the onset of the attack of influenza.

"In February, 1892, I commenced treating influenza in the manner above described, and all the cases so treated were out and about in two or three days. It so happened that every case was seen within a few hours from the onset of the attack. In the end of 1892 and spring of 1893 I treated a second batch of cases, for the most part without any good results.

"Carefully reviewing my results, I began to perceive that they seemed to stand in some direct relation to the period of the disease at which the treatment had been commenced.

So I determined to take twenty-four hours from the onset of the disease as a time limit, and to treat no cases with cinnamon where this time limit was overpast. Since the spring of 1894 I have invariably observed this time limit and have treated a large number of cases, and in every case so treated within twenty-four hours from the onset the patient has returned to his place in society within five days from the commencement of treatment, and in no case have I been embarrassed by complications of any kind. Recently I have attended a young lady for influenza, who was treated with cinnamon, though she was rather over the time limit, and she did not go downstairs till the seventh day from the commencement of treatment, but as she is within three weeks of her first confinement I do not consider that she has done badly. In those cases where the treatment has been commenced within four or five hours from the onset of the attack I have found patients usually able to return to their duties within forty-eight hours.

"The decoction is prepared by slowly boiling a pound of cinnamon *in vacuo* with a sufficiency of water till the fluid is reduced to a pint and a quarter." . . . . . .

"My work during the past five years is summed up in the above bald statement. Should what I have said induce others to make a trial of my method of treating influenza, I trust they will do me the justice to follow the rules of practice that I have ventured to lay down." (*Brit. Med. Jour.*, Vol. I for 1899, page 660.)

Citrophen (Phenetidin Citrate), although very little reported upon during the past year is receiving attention from some observers.

Dr. Heidingsfeld, an Alsacian, living in Blotzheim, reports having obtained satisfactory results after his continued experience with this article in 36 cases of various affections. He found it quite efficient in rheumatism of joints and muscles, although in the tabulated series of cases which he presents, he does not include acute rheumatism in

which previous observers have reported excellent results. He claims that his cases usually required only a total of from 8 to 10 grammes (123.5 to 154.3 grains) to obtain complete results, given in doses of 5 grammes (77.2 grains). He did not obtain good results in pyrexia which is contrary to previous observers, but did obtain encouraging results in cases of neuralgia, not of organic origin, also in the severe headache of influenza and in acute tonsilitis. He finds that it is non-toxic and does not affect the heart action. (*Allgem. Med. Central-Zeitung*, Vol. 68, page 779.)

Cocaine Hydrochlorate being the soluble form of the alkaloid most largely used, is still receiving much attention, and at times in new lines.

Dr. August Bier, of Kiel, Prussia, has recently reported the results of his experiments to test the practicability of rendering considerable areas of the body anaesthetic by injections of this agent directly into the spinal cord. The lower limbs were generally selected. His experiments had relation especially to the possibility of anaesthetizing these parts when undertaking major operations. The first step was to introduce the drug by means of Quincke's lumbar puncture, so manipulating by pressure of the finger to prevent the cerebro-spinal fluid from escaping. Then the injection was made with a Pravaz syringe. He found that from 5 to 10 milligrammes (about 1-16 to 1-8 of a grain) of Cocaine Hydrochlorate produced the required anaesthesia and enabled him to perform resections on the knee-joint, ankle-joint, on the ischium and other major operations without pain—even complicated operations of the femur were painlessly accomplished. He reports that the only ill-effects noticed were severe headache, nausea and vomiting, which however only occurred with some of the patients, but they suffered thus for several days after the operation. Both Dr. Bier and his colleague, Dr. Hildebrand, were then bold enough to subject themselves to such injections, accomplishing results in from 5 to 8 minutes with a dose of 5 milli-

grammes (about 1-16 of a grain). The anaesthesia lasted for about forty-five minutes when normal sensibility gradually returned. They also noticed the unpleasant sequelae. Their detailed report is surely worth careful reading. (*Deut. Zeitschrift für Chirurg.*, Vol. 51, page 361.)

Dr. P. G. Unna, of Hamburg, Germany, continues to report good results in dermatology by the use of a powder composed of Cocaine Hydrochlorate 0.5 to 1.0 gramme (7.7 to 15.4 grains) and Magnesium Carbonate 10 grammes (154.3 grains). As an anaesthetic in cauterisations and scarifications, the mixture is dusted on and covered with moist cotton rendered aseptic and held in place for ten or fifteen minutes. He also reports on his preference for the Alkaloid Cocaine for local anaesthetizing the superficial surface of the skin when unbroken. In such symptoms as itching he uses from 1 to 2 grammes (15.4 to 30.9 grains) of the alkaloid, applied either by sponging or in the form of a dressing.

Dr. Walter P. Jenney, of Deadwood, South Dakota, in publishing some "Notes on Cocaine," states that "the therapeutic action of cocaine upon the human skin appears to have escaped the attention of investigators. Most of the standard works on the subject either omit any mention, or state that the drug is not absorbed." He goes on to explain the action of Cocaine Hydrochlorate upon the skin, and also to discuss the subject of this agent not being a simple alkaloid. (N. Y. *Med. Record*, Vol. 55, page 424.)

Upon the use of Cocaine as a means of diagnosis, Dr. Liebrecht of Hamburg, Germany, reports "Concerning the Nature of Papillary Appearances and Their Diagnostic Significance." (*Deut. Med. Wochensch.*, Vol. XXV, pages 408 and 424.)

Dr. Carl Seiler of Scranton, Pa., read a paper before the Scranton Clinical and Pathological Society, on June 2d, last on "Facial Eruptions due to Intranasal Disease," calling attention to cutaneous eruptions produced by the local application of Cocaine. (N. Y. *Med. Record*, Vol. 56, page 263.)

Local anaesthesia is claimed to be more readily accomplished by combining Cocaine Hydrochlorate in 1, 2, 3, 4 or 5 per cent. solutions with ethyl chloride. It is explained that the ethyl chloride simply acts as a vehicle for the Cocaine and removes the fats from the surface of the skin, thus allowing the Cocaine to penetrate deeper. By this plan hypodermic injections are avoided and the liability to Cocaine intoxication minimized. This plan may be carried out with the thermo-cautery. Anaesthesia is claimed to be obtained in about five or six minutes.

Creosotal (so-called Creosote Carbonate) is still found to be an efficient form in which to give Creosote, and it is being employed in the same line of cases as reported upon previously.

One of the most recent applications, however, is in the treatment of fetid breath. Dr. Bayer has obtained good results in obstinate cases were such a symptom has been evidence of a chronic affection of the nasopharynx. He injects this agent intratracheally by means of the intralaryngeal syringe, using slightly warmed Creosotal. He finds that the injection of such quantities as from 0.5 to 1.5 Cc. (8 to 25 minims) produces no irritation, and relief is usually obtained from one such injection. (*Rev. de Thérap. Médico-Chirurg.*, Vol. 65, page 847.)

Creosote (Beechwood) no longer holds the prominent position it has in past years, chiefly for the reason that Guaiacol and its combinations have quite succeeded it in most uses. However it is being still further investigated and much scientific work has been reported.

At a meeting of the Pennsylvania Pharmaceutical Association, held on Tuesday, June 13th last in Philadelphia, Mr. Lyman F. Kebler contributed an interesting article on "Wood Tar Creosote" in which he emphasized the fact that the previous general opinion that Creosote was a mixture of guaiacol and creosol in which the former ingredient was the prominent one must now be given up, for little Creosote can

be obtained, containing even as high as twenty per cent. of guaiacol. Some commercial brands do not contain any guaiacol. (*Amer. Jour. of Pharmacy*, Vol. 71, page 356.)

Recently the Christiania (Norway) Academy of Sciences awarded the gold medal of that society to Dr. Alfred Mjöen for his treatise on the composition of the different kinds of Norwegian tar. The principal point he brought out was that it can be obtained directly from sawdust, which would naturally decrease the cost very considerably. Heretofore it has been always claimed that the Beechwood was the only recognized source of the article to be used in medicine. Dr. Mjöen is a pharmacist of increasing prominence who is devoting his time to research work.

The above explanation for the gradual retirement of Creosote, although a potent one and quite large in extent, is not the only one. The hygienic treatment of pulmonary tuberculosis is increasing very rapidly, and in some parts of the world where Cod-liver Oil, Creosote and Guaicol were formerly among the regular medicaments used, they are to be found quite wanting, and in other places only used as adjuvants. This reaction may have gone too far in the wrong direction, but the advantages of a rational hygienic treatment are so self-evident that it may be confidently expected to hold its own to a great extent.

It may be well to give here a few of the reports of those who still cling to this agent as being of some value.

Dr. Camille Savoire presented a communication to the Paris Academy of Medicine at its meeting on July 5, 1898, on the advantages of this agent in pulmonary tuberculosis. His chief point was that the best results were obtained by giving very large doses, and that they were well borne, even when given for months at a time. His experience was based upon his observations in his surgical clinic at the Hôtel Dieu. No inconvenience followed from as much as 15 grammes (about 4 drachms) a day for several months. (*Bulletin de l'Académie de Médecine*, Vol. XLI, page 691.)

Dr. L. H. Warner, of Brooklyn, N. Y., gives his experience with Creosote in pulmonary tuberculosis and recites two favorable cases. He however reinforced his Creosote treatment by Nuclein and tonics, and thus, no doubt, rather confused the claims for or against Creosote. (*Buffalo Med. Jour.*, Vol. LIV, page 690.)

Dr. Carlo Ruata, of the University of Perugia, Italy, brings forth another form of treatment after some experimentation. It consists in the graduated continuous inhalation of Alcohol, Creosote and Chloroform. He records 11 typical cases of tuberculosis "cured perfectly." In another series of 32 cases he reports 22 in which the progress of the affection was arrested so as to put them "out of danger." (London *Lancet*, Vol. II for 1899, page 917.)

A report is published by Mr. W. Devereux, surgeon to the Tewkesbury Hospital (England) giving the results in that hospital of the treatment of gangrene of the lung by means of Creosote vapor. Quite a detailed account is given of the only case on record. (*Brit. Med. Jour.*, Vol. I for 1899, page 532.)

Dr. E. Schoull, of Tunis, Africa, expresses his belief that lobar pneumonia may be successfully treated by means of Creosote clysters. His plan is to cleanse the bowel by an enema and then give 20 to 40 drops of Creosote twice a day in the form of a clyster. He claims that either the pneumococcus is absolutely destroyed or its toxicity markedly diminished. (*Bull. Général de Thérap.*, Vol. CXXXVI, page 133.)

Combinations of Creosote with Glycerin and Creosote with Alcohol and Glycerin are still used, and some success is reported in the treatment of ozaena with such.

Dr. J. M. Allen, of Liberty, Mo., has obtained some benefit from a combination of Creosote, 1-3 of a drop; Tincture of Nux Vomica, 10 drops, and Saw Palmetto, 4 grammes (60 grains), in the treatment of diabetes mellitus. (*Jour. Amer. Med. Assoc.*, Vol. XXXIII, page 1070.)

Dr. Vladimiro de Holstsin claims that Creosote gives excellent results in the treatment of chronic constipation, restoring the appetite and giving more energy to the whole system. "The effective dose is about seven or eight drops taken twice daily." (*Diet. and Hyg. Gazette*, Vol. XV, page 191.)

Drs. F. Balzer and Monsseaux have reported one case of keloid of the ear lobule which followed after removing a small tumor, which they treated by injecting 20 per cent. solution of Creosote in Olive Oil. The injections were 1 Cc. (about 16 minims) each, and different parts of the tumors were selected for each injection. (*Annal. de Dermat. et de Syphil.*, Vol. IX, page 1145.)

Dr. P. G. Unna, of Hamburg, Germany, reported at the meeting of the Aerztlicher Verein of Hamburg, on February 21st last, that his favorite treatment of lupus was with Creosote combined with salicylic acid. He claims that salicylic acid alone appears to only reduce the lupus tissue without destroying the tubercle bacilli. Therefore he recommends the following formula as being far superior to arsenic or pyrogallol in their various forms:

Salicylic Acid	2.0	grammes	(30.9	grains).
Solution Antimony Chloride...	2.0	"	(30.9	").
Creosote	4.0	"	(61.7	").
Solid Extr. of Cannabis Indica	4.0	"	(61.7	").
Wool Fat	8.0	"	(123.5	").

(*Therap. Monats.*, Vol. XIII, page 282.)

Dr. A. O. Fitzgerald, of Belgaum, India, reports his clinical results in "The Treatment of Malarial Fevers by the Inunction of Creosote" in a number of cases, giving a painstaking detail in tabular form. He concludes as follows:

"Though I regret that I have been unable to keep notes of other cases, I do not think it necessary that anything should be added to this record to prove the value of the treatment. My object is simply to bring to notice, particu-

larly in the interests of the last class of cases, which are frequently found so very difficult to treat by other means. Personally I never now answer a call to a sick child night or day without taking a small bottle of creosote with me. In this way time is saved, which perhaps could never be made up if lost. It appears to me to be an ideal treatment for malarial fevers in children, as it combines everything that is necessary, even in very severe cases; it is easily applied; it acts rapidly and continuously, and, as far as my experience goes, with certainty; and I have never seen any bad effects, even after the excessive use of the drug. I need only allude to the possiblities of treatment of the more malignant forms of malarial fevers by the external or internal administration of this drug." (*Brit. Med. Jour.*, Vol. II for 1899, page 140.)

Some suggestions have been made throughout the past year in relation to various forms for the administration of this agent which are a little out of the ordinary. They may be of interest here.

Dr. Kopp, of Lyons, France, suggests the following combination: Beechwood Creosote, 1 part; Benzoin, 1 part, and Powdered Vegetable Charcoal, 6 parts. Triturate the Creosote with the Benzoin for a few minutes, and then gradually add the charcoal. He recommends this mixture to be taken in the form of wafers. He states that it does not soil paper. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. 46, formulas following page 396.)

A new combination, chemically known under the name of Creosote Tanno-Phosphoric-Ester, is claimed to have been found of value in all tuberculous conditions which were accompanied with diarrhea. It is reported to be a grayish, syrupy liquid and has been given the short name of "Taphosote."

A new Creosote compound now comes from France. It is claimed to be a Creosote Ether, consisting of Creosote 80 per cent. and Phosphoric Anhydride 20 per cent., in the

form of a thick, clear liquid with a slight odor and taste of Creosote. The short name of "Phosote" has been given it. As might be supposed, it is used in the same line of cases as Creosote and Guaiacol.

Dr. A. B. Briggs, of Ashaway, R. I., reports "On the Use of the Valerianates of Creosote and Guaiacol in the Treatment of Pulmonary Tuberculosis." (*N. Y. Med. Jour.*, Vol. LXIX, page 706.)

Diuretin (Sodio-Theobromine Salicylate) is still kept before the profession by repeated advertising, but so little has been recorded in the prominent medical literature of the year that either of two conclusions can probably be drawn—either that its usefulness is so well recognized that observers think their fellow practitioners know all about it, or that it has dropped out of general practice quite completely—at least out of the practice of those who make a point of publishing their results.

Dolomol Compounds are quite prominent agents before the profession at this time, especially among the dermatologists. The base Dolomol is claimed to be a mixture of Calcium and Magnesium Stearo-Palmiate and various drugs are incorporated with it mechanically to form these so-called Dolomol Compounds. Some of the drugs used are: Acetanilid, Acid Boric, Acid Carbolic, Acid Picric, Acid Pyrogallic, Acid Salicylic, Acid Tannic, Aristol, Chrysarobin, Europhen, Guaiacol, Menthol, Resorcin, Salol and various others, in varying proportions.

Dr. Thurston G. Lusk writes to the editor of the *Journal of Cutaneous and Genito-Urinary Diseases* (Vol. XVII, page following 398), that he has found Dolomol-Acetanilid (25 per cent.) particularly useful in varicose ulcers and chancroids, and Dolomol-Resorcin (10 per cent.) in seborrhoeal eczema of the body and face, in seborrhoea oleosa and in acne. In all, he has used it in 100 cases of various skin diseases.

These compounds are applied chiefly in the form of dust-

ing powders, and the name "Pulvola" has been given to the plain Dolomol powder, as a short name for general use.

Dormiol is the short name given to the combination of chloral hydrate and amylene hydrate, and previously known under the name of Amylene-Chloral. As would naturally be supposed its chief use is as a hypnotic and is claimed to be quite a harmless agent. It is offered in the form of a colorless, oily liquid with an odor resembling camphor and with that peculiar taste. It is insoluble in cold water but soluble in alcohol, ether, acetone and fatty oils.

Dr. Meltzer, of Colditz, Saxony, has carried on a series of experiments with it on animals; also in insane cases of human beings. The dose varied from 500 milligrammes to 2 grammes (7.7 to 30.9 grains). The largest dose given was 3 grammes (46.3 grains) but this was only necessary in specially excitable cases. It does not possess the cumulative action of chloral, and is therefore claimed to be superior in those cases where a hypnotic needs to be continued and yet avoid a habit. (*Deut. Med. Wochensch.*, Vol. XXV, Therap. Beilage, page 29.)

Egol is the name given to a derivative of the phenols, producing a class of new antiseptics. It is applied to the product obtained by the action of nitric acid upon the para-sulphonic derivatives of phenols and then combining with mercury. The action of nitric acid produces ortho-nitro-para-sulphonic acid. This combines with one atom of mercury for each two atoms of phenol present.

Prof. E. Gautrelet presented his results with this new class of antiseptics before the French Academy of Science on July 10th last, stating that he had obtained an ortho-nitro-phenol para-sulphonate of mercury, an ortho-nitro-cresol para-sulphonate of mercury and an ortho-nitro-thymol para-sulphonate of mercury. The names of these are abbreviated to read as follows: Phen-egol, cres-egol, thym-egol. He claims these combinations are very stable and are offered in the form of a reddish-brown powder. They are

readily soluble in water but insoluble in strong alcohol. The aqueous solutions are odorless and tasteless, are neither caustic nor irritant, do not coagulate albumin, are not decomposed by organic matter, but do precipitate toxins. They prove to be non-toxic in doses amounting to 2 grammes (30.9 grains) per kilogramme of body weight when injected hypodermically. When taken internally they act as emetics. They prove to be powerful bactericides, for they arrest all development in bacterial cultures when used in the proportion of 4 to 1,000. (*Pharm. Jour.*, Vol. IX, Fourth Series, page 235.)

Endomentol is the manufactured name (the etymological basis for which is difficult to understand) to describe in one word Nicotine Salicylate. It is little heard of except through Prof. Volters, who has described it as being a specific in the treatment of scabies. He recommends it made up into a 0.1 per cent. ointment with vaselin or lanolin. It is described as being in the form of colorless, transparent crystals, having a slight empyreumatic odor, soluble in water and most other solvents.

Erythrol Tetranitrate (Tetranitrin) has now been before the profession for some time, but it may be well to recall here that it is formed by the action of fuming nitric acid upon a derivative of a certain product found in some varieties of lichens under particular conditions. It is well known to be explosive and is quite costly. Its use extends back for several years in such affections as nitro-glycerin would be prescribed.

It has come into special prominence recently on account of some unfortunate results both in this country and abroad. In England they had a distressing explosive accident which has exercised the profession and public considerably.

It continues to be of special value in angina pectoris.

Dr. Boughton Addy, of Birkdale, Southport, England, reports that he finds it superior to Glonoin. (*Brit. Med. Jour.*, Vol. I for 1899, page 1088.)

Ethyl Bromide (Hydrobromic Ether) continues to be the favored anaesthetic with many surgeons for short operations.

Dr. Frank C. Hammond who last year made an earnest plea for its more general use, has again emphasized its value in gynecology and obstetrics and read a paper before the Philadelphia Obstetrical Society on January 5th last pointing out how much superior this anaesthetic is over ether and chloroform when making a hurried examination, and how the after-effects are almost entirely avoided. He makes use of a folded towel upon which 4 grammes (about 1 drachm) of the Bromide are poured. He holds it closely over the nose and mouth and keeps renewing the anaesthetic every few seconds until narcosis is complete. He advises limiting its use to the second stage of labor except in primipara, when the pains of the first stage become excruciating. In obstetric operations, where prolonged anaesthesia is required, he prefers chloroform and next ether. (*Phila. Med. Jour.*, Vol. 3, page 126.)

Dr. E. Larisch, of Breslau, Prussia, has made use of this anaesthetic in more than 120 cases and regards it as quite an ideal anaesthetic. He claims that the unfortunate results which have occurred in years past and discouraged its more general use, are due to administering either too much or giving it in a too concentrated form. Of course he admits also that lack of care in the purity of the preparation had naturally its bad effect. The exciting stage was observed in only eight per cent. of his cases and all these were adults—no such effect was produced in children. Vomiting was noticed in less than two per cent. of his cases. He found it particularly effective in cardiac cases. He repeats what has been so frequently noticed with this anaesthetic—that the reflexes are never entirely abolished during its administration. He therefore reiterates the caution that care must be taken in observing how deeply the patient is under its influence. He readily reduces fractures

under this anaesthetic, for the muscles are so relaxed that manipulation is accomplished most satisfactorily. (*Centralbl. für Chirurg.*, Vol. 26, page 446.)

Dr. J. Elmond Kempter, of Saint Thomas, Pa., joins with most other advocates of this anaesthetic in extolling its use in minor surgery. (*Maryland Med. Jour.*, Vol. XLII, page 133.)

Accounts of fatal cases continue to appear, but possibly greater care and purity in the anaesthetic have considerably reduced the number during the past year, as far as reports go. One of the most recent fatal cases occurred in the office of a dentist, but a regular physician administered the anaesthetic and apparently all the proper precautions were taken.

Ethyl Chloride (Muriatic Ether) as an anaesthetic is comparatively little heard of in this country. Abroad however they still make use of it, and occasionally reports appear.

Dr. J. Wiesner reports his results in 400 cases in Prof. von Hacker's Clinic at Innsbruck, Austria. He enumerates its advantages and states that he has found it not only most suitable in short operations, which has long been known, but in operations lasting as long as fifty minutes. He has recognized also what others have spoken of, that the pupil and corneal reflexes generally persist, and questions are even answered by the patient without necessarily remembering afterwards anything about the conversation. He alludes to two of the disadvantages as being: failure to produce complete muscular relaxation, and that of having the patient wake up occasionally in the middle of a long operation. He speaks of it highly as a suitable anaesthetic on the battle field in the first aid to the wounded. (*Wien. Med. Wochensch.*, Vol. 49, page 1334.)

Dr. Bloch, of Copenhagen, Denmark, read a paper on its use as an aid in major operations, before the Northern Surgical Congress held at Stockholm, Sweden, in August last. He made use of it as a local anaesthetic in conjunction with

chloroform inhalation. He aims to use a very small quantity of chloroform for what he called the "psychic" pain only. Then when the patient becomes quiet he only uses Ethyl Chloride locally, claiming that the skin is the only sensitive part of the body, and that the other tissues are almost absolutely without sensation. He states that vomiting is not entirely avoided by this method of anaesthetizing, but it is greatly reduced. (*Phila. Med. Jour.*, Vol. 4, page 464.)

Eucaine (Benzoyl-Vinyl-Di-Aceton-Alkamin) is still advocated as a local anaesthetic by an increasing number of surgeons.

Mr. Ernest A. T. Steele, of Southend-on-Sea, England, writes to the editor of the London *Lancet* stating that he has used it locally pretty freely during the last six months with very satisfactory results. He has removed lipomata and other like tumors, and has ligatured the internal saphena vein in four cases. As to the dose, he states he has never used less than 1.3 Cc. (20 minims) of a 5 per cent. solution, but has gone as high as 7.4 Cc. (120 minims). "In none of my cases have there been any signs of an overdose or any unpleasant result. The wounds will heal if due aseptic precautions are observed as well as if a general anaesthetic were used. I think eucaine decidedly preferable to cocaine as a local anaesthetic and now always use it for this purpose." (London *Lancet*, Vol. II for 1899, page 318.)

Mr. Gerald Dalton, of London, England, claims that this anaesthetic "is best used hypodermically with a rather large syringe." He uses a 1 per cent. normal saline solution of Eucaine after such small operations as opening buboes, etc. "For mucous passages—urethra, etc.—or for curetting after opening buboes, etc., a 5 per cent. solution should be kept in contact with the tissues for five minutes or more (with 3 per cent. cocaine better results will be obtained in the urethra). The eucaine solution may be ster-

ilized by boiling. It causes a good deal of local hyperaemia and swelling." (London *Lancet*, Vol. II for 1899, page 318.)

Mr. George G. Hamilton, of Liverpool, England, Assistant Surgeon to the Royal Infirmary, contributes an article on Eucaine-B as a local anaesthetic. After trying the various local anaesthetics he finds this agent by far the most satisfactory. He describes his method of administration and appends notes of ten of his cases. (London *Lancet*, Vol. II for 1899, page 552.)

Dr. Bayer has reported his results in its application to operations upon the esophagus and the rectum. He uses a 3 per cent. solution effectively before passing the esophageal tube. He obtained very gratifying results in cases of carcinoma where the patients found great difficulty in swallowing even fluids by means of a syringe, but after an application of this solution, solid food was readily swallowed. He states that the patients readily learned how to make such an application for themselves, and there was practically no toxic effects. In applying it to the rectum the solution is introduced on a piece of cotton, and it so quickly and effectively anaesthetizes the part that instruments may be promptly introduced for dilating without any pain. (*Therap. Monats.*, Vol. XII, page 179.)

Dr. A. H. Peck, of Chicago, Ill., presented a paper to the Section on Stomatology at the meeting of the American Medical Association held in Columbus, Ohio, in June last on the " Relative Toxicity of Cocain and Eucain." His experiments led him to conclude as follows:

"1. The action of cocain is inconstant; one never knows whether the symptoms occasioned by like quantities of the drug, in animals or individuals, under like circumstances, will be similar or dissimilar.

" 2. The action of eucain is constant. The symptoms occasioned by the use of like quantities in animals under like circumstances, and so far as my experiments have gone, in different individuals also, are the same.

"3. The first action of cocain on the heart is that of a depressant, and on the respiration it is that of a mild stimulant, the after-effects being, on the heart, that of a decided stimulant, and on the respiration, that of a decided depressant.

"4. The first action of eucain on both the heart and respiration is that of a stimulant, the after-effects being that of a decided depressant.

"5. Cocain causes death in animals by paralyzing the muscles of the respiratory apparatus, the heart's action continuing in a feeble way for a brief period after breathing ceases.

"6. Eucain causes death in animals by paralyzing the muscles of the heart and of the respiratory apparatus, they ceasing to operate simultaneously.

"7. Eucain in toxic doses nearly always causes nausea, and occasionally vomiting.

"8. Cocain is much less nauseating and scarcely ever causes vomiting.

"9. Eucain is decidedly a diuretic, causing renal discharge in a majority of instances in which a toxic dose is used.

"10. Cocain is not a diuretic to any appreciable extent, renal discharge having occurred in only one instance in connection with all my experiments.

"11. The pupils of the eyes, in nearly all cases of cocain poisoning, do not respond to light and are more or less bulging from their sockets.

"12. The pupils of the eyes in most cases of eucain poisoning do respond feebly to light, and rarely ever bulge from their sockets.

"13. The action of toxic doses of eucain is more like that of a paralyzing, tetanoiding, convulsion-producing agent than it is like an anesthetizing one, the plantar and cremasteric reflexes nearly always responding.

"14. Toxic doses of cocain cause general anesthesia in

connection with the other symptoms in the majority of cases.

"15. True tetanus, of all striped muscles of the limbs, and Cheyne-Stokes' breathing nearly always occur with the use of cocain, but seldom does either occur when eucain is used.

"16. Cocain is at least three times more toxic than beta eucain, and alpha eucain is as toxic as cocain.

"17. Boiling does not destroy the efficacy of cocain, but it does modify it, and boiling in no degree lessens the efficacy of eucain.

"The above deductions have been made only after many experiments in connection with each individual point. I have observed many interesting features in connection with the relative worth of these drugs as local anesthetics, but this paper is not to treat of this phase of the work. There is much experimental work yet to be done in this connection, the results of which I shall be pleased to present at some future meeting."—(*Jour. Amer. Med. Assoc.*, Vol. XXXIII, page 643.)

Eucasin (the new food compound similar to Nutrose) has not been commented upon during the past year. Undoubtedly the unusual number of such compounds appearing during the past year has had some influence in retiring a few of those which have been considered in the past.

Euchinin (Euquinine)—the compound formed by the reaction between Ethyl Chloro-Carbonate and Quinine—has not been much heard of during the past year. What little has been reported, however, comes from its use in pertussis.

Dr. Cassel, of Berlin, Germany, reports very gratifying results in certain cases of pertussis. He finds that its best effect is obtained in cases where there is no fever or other complications, for it has little force in those having either a fever or a capillary bronchitis. His results are carefully tabulated and give evidence of being closely observed. (*Therap. Monats.*, Vol. XIII, page 190.)

Eudesmol is the name given to a crystalline camphor obtained from eucalyptus oil. Two years ago Mr. H. G. Smith and Mr. R. T. Baker isolated this product, and recently Mr. Smith read a paper upon it before the Royal Society of New South Wales. It proved to be an isomeric body with camphor, but chemically it is shown to have its oxygen atom combined in a different way.

No clinical reports are yet found as to its use. It is simply interesting at this time as being closely allied to eucalyptol and may have appropriate uses.

Eudoxin (Bismuth salt of Nosophen) continues to be used and preferred by a few as a gastro-intestinal disinfectant. It still finds advocates in the treatment of typhoid fever and in ailments in which gastro-intestinal complications enter.

Dr. Gustavus M. Blech, of Chicago, Ill., writes on its use in paediatric practice. His observations cover a period of almost three years, with sixty-three cases. (*N. Y. Med. Jour.*, Vol. LXX, page 51.)

Eugenol (Eugenic Acid)—one of the oxidation products of oil of cloves—is a colorless oily liquid which has been used for some years in the treatment of eczema and as a rather weak anaesthetic. Its chief use however has been among the dentists as a powerful antiseptic and antiputrescent. It has recently been recommended in combination with zinc oxide for a dental filling, being quite equal to any of the best cements known.

Eugol is the short name given to a new antiseptic mixture offered by an English manufacturing firm. It is claimed to be a colorless solution containing B-Naphthol, Extract of Hamamelis, Eucalyptol, Salol, Menthol, Boric Acid and a small per cent. of Formaldehyde. Its odor is that of wintergreen. It is claimed that the proportions of each ingredient are so small that no fear of toxic effects may be looked for, and its efficiency as an antiseptic, germicide and deodorant should be appreciated. It is recommended as a throat

spray and mouth wash and may be incorporated in a tooth powder. As a tooth powder it has proved to be an effective antiseptic and stimulant with slight astringent properties, keeping the teeth and gums in a firm, healthy condition. (*Pharm. Jour.*, Vol. VII, Fourth Series, page 562c.)

Eumenol is the name given to the Extract of Tang-kui Root—a plant which has been used in China apparently for many centuries past as a specific in menstrual difficulties. Evidently the German investigators have taken it up quite recently, and having prepared this extract from the imported root, have found that they could verify the results obtained by the Chinese physicians.

Dr. Friedrich Hirth, of Munich, Bavaria, was apparently the first to obtain the product in this country, and he writes of his experience in an article entitled "A Chinese Emmenagogue for Amenorrhea and Dysmenorrhoea (Extractum Radicis Tang-Kui." (*Muench. Med. Wochensch.*, Vol. 46, page 769.)

Dr. Arthur Müller, of the same locality, makes his report of trials on eighteen patients in his own practice. It was found effectual in quite all cases of inflammatory troubles in the genital organs, hastening a retarded menstruation. It proved to be non-toxic and was given in doses of 5 grammes (a teaspoonful) three times a day. His experiments on animals proved that it was not an abortefacient. (*Muench. Med. Wochensch.*, Vol. 46, page 796.)

Eunol is the short name applied to the combination of alpha- or beta-naphthol and eucalyptol. The first is known as Alpha-Eunol and is obtained by stirring and gently heating equal parts of alpha-naphthol and eucalyptol until the naphthol is dissolved. On cooling the product congeals in a crystalline mass, insoluble in water, but readily soluble in alcohol, ether, chloroform, olive oil and hot glycerin—separating out after cooling in the form of fine needles. Beta-Eunol is obtained by heating together equal parts of beta-naphthol and eucalyptol as in the previous

case. This on cooling, however, forms a homogeneous crystalline pulp, and when treated with hot water melts and yields an oil which, after congealing, assumes a beautiful crystalline form. Its solubility is the same as the first product. These two compounds are recommended in the treatment of wounds and ulcers having fetid discharges. Nothing clinically is yet reported concerning them.

Euphthalmin is the Hydrochlorate of a Mendelic Acid derivative of Methyl-Vinyl-Di-Aceton-Alkamin which bears the same relation to Eucaine that Homatropin does to Tropacocaine. This new mydriatic which was alluded to here last year is still before the profession as a substitute for both atropin and homatropin in ophthalmological practice.

Dr. A. Darier, of Paris, France, reports that after his repeated use covering quite a period of time, he has yet to observe any of the unpleasant symptoms often met with after the use of the other well-known agents. He makes use of one or two drops of a 5 per cent. solution. The only complaint he hears from the patient is that of a slight dimness which is only mentioned as an inconvenience. The eye rapidly returns to its normal state. He has found good use for it in doubtful cases where atropin might give disagreeable effects. The dilatation of the pupil is very rapid, and the power of accommodation is unaffected.

Professors Vossius, Treutel, Schneider and Winselmann also report on its beneficial effects. (*La Clinique Opthalmol.*, Vol. 5, page 77.)

Dr. Grandclément makes use of a solution of 250 milligrammes (4 grains) of Euphthalmin in 10 grammes (154.3 grains) of distilled water to dilate the pupil. He uses only a few drops and obtains complete dilation at the end of ten to twelve minutes, while the accommodation is only disturbed for about an hour afterwards. (*Lyon Médical*, Vol. XCII, page 456.)

Dr. Edward Jackson, of Denver, Colo., makes good use

of it in combination with cocaine to produce mydriasis. (*The Ophthalmic Record*, Vol. VIII, page 343.)

Dr. James Hinshelwood, of Glasgow, Scotland, read a paper before the Section of Ophthalmology of the British Medical Association at its annual meeting at Portsmouth in August last on the use of this agent. He concludes as follows:

"We are yet in search of the ideal mydriatic, such as would dilate the pupil rapidly and with certainty to its maximum; would have no effect whatever upon the accommodation; would allow the pupil to return rapidly to its normal condition, and would have no other effect upon the eye. Euphthalmin, although it does not completely fulfil all these conditions, yet approximates to them more closely than any other mydriatic hitherto used in ophthalmic practice, and will therefore prove a very valuable addition to the *Pharmacopœia* of the ophthalmologist." (*Brit. Med. Jour.*, Vol. II for 1899, page 774.)

Dr. Voscressensky, a Russian physican has carried on a series of confirmatory experiments with this agent as a mydriatic and reports his results. (*Rev. de Thérap. Méd. Chirurg.*, Vol. 66, page 421.)

Europhen (Iso-Butyl-Ortho-Cresol Iodide) has now become somewhat established in the profession. As a dressing for wounds it is much preferred to iodoform by an increasing number of observers, for apparently eczema never follows its use. In wounds of most kinds, and in ulcers, burns, abscesses, chilblains and the like, healing rapidly occurs. In the form of a mixture with powdered boric acid, it makes an effective dusting powder. A 5 per cent. solution in olive oil works admirably in skin affections. Other observers combine it with olive oil, lanolin and vaselin in varying proportions, making a serviceable ointment.

Dr. Lawrence F. Flick, of Philadelphia, Pa., under the head of "The Treatment of Tuberculosis," makes use of this compound with oils of rose, anise and olives in the

form of an ointment which he applies to the armpits and inside of the thighs once or twice a day. He has used this form of treatment for a number of years and is convinced of its value. (*The Penn. Med. Jour.*, Vol. III, page 250.)

Dr. G. Howard Thompson, of St. Louis, Mo., much prefers this agent to iodoform in gynecological practice. (*Amer. Jour. of Surg. and Gyn.*, Vol. XIII, page 50.)

Exalgin (Methyl-Acetanilid)—the angalesic—has not received as much comment this year as in the year previous, but it is still widely used. There are a few after-effects which are occasionally observed. One observer reports a deep rash which lasted for six hours after prescribing 500 milligrammes (7.7 grains) of this agent. Four days after, another dose of 250 milligrammes (about 3.8 grains) produced the same symptom. The French observer, Dr. Schull, has found that better results are obtained by giving it with other drugs. As an analgesic, he recommends combining with phenacetin and antipyrin. As an antipyretic, with phenacetin and quinine sulphate.

A report comes from the (British) Government Civil Hospital at Hong Kong, China, of a case of Exalgin poisoning, in which recovery resulted after a very large dose. This was reported by Mr. J. Bell and is worth repeating here for the reason that poisoning effects from this agent are so uncommon.

"A Chinese male adult was taken to the Government Civil Hospital, Hong-Kong, on July 31st at 11 a. m. by his friends, who stated that he had taken some medicine out of a tin purchased in the town and this tin they produced. It was the usual one-ounce tin stamped with the words "Exalgine" and "Merck" The patient was quite unconscious, intensely livid, with pin-point pupils and a full bounding pulse. His temperature was 100.8° F. He had vomited once. He was given 30 grains of salicylic acid by the nasal tube and one-fiftieth of a grain of atropia hypodermically and was put to bed. He remained in much the

same condition, so two hours later he was given one-hundredth of a grain of atropia with small quantities of milk and strong coffee. The urine was examined and contained one-fifteenth albumin. During the night he again had one-hundredth of a grain of atropia. Next morning he was out of danger, though his color and pupils were not quite normal, but the urine was now free from albumin. He was somewhat weak for several days and his temperature varied between normal and 100.8°, though this might have been due to the primary syphilis from which he was found to be suffering. He apparently purchased and took the medicine to open his bowels, though it was found impossible to ascertain why and where he bought it.

"*Remarks by* Mr. Bell.—This case is deemed worthy of recording, as poisoning by this drug is uncommon. The similarity between its effects and those due to opium are noteworthy, and fortunately the similarity extends to the treatment, if it is considered that treatment was of avail. There does not seem to be any note in the text-books as to whether albumin is present in the urine in opium poisoning, and though poisoning by this latter drug is common here, no note has so far been made as to its presence, though this omission will in future be remedied. Mr. Browne (the Government analyst) kindly confirmed the fact of the drug in question being exalgine and informed me that the patient must have taken 150 grains, judging from the amount missing from the box and from the patient's statement that he only took one dose. The hints as to treatment were found in "Martindale's Extra Pharmacopœia." (London *Lancet*, Vol. II for 1899, page 890.)

Filmogen (Pyroxylin dissolved in Acetone and a small portion of Castor Oil added) has been little heard of in the current medical literature of the year. However, Dr. Pietro Ballico, an interne in Vienna, Austria, publishes an enumeration of its suggested uses in a 10 per cent. solution. (*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 15.)

Formaldehyde—the well-known antiseptic, disinfectant, deodorizer and germicide—needs no mention to medical or pharmaceutical observers at this time. Hardly a journal can be picked up now-a-days which has not some mention of this very effective and widespread agent. It will therefore only be of interest and profit in such comments as these to allude to the more prominent points brought out throughout the year.

Last year the series of experiments carried on by the Chicago Health Department were alluded to here. These experiments have been continued, and the following extract from the report is of interest:

"An unusually low temperature during November afforded opportunity for demonstrating the sufficiency of the margin of safety—both as to volume of gas evolved and period of exposure—in the Department method of disinfection by formalin-sprinkled sheets. Special tests were made during the coldest periods—week ended 19th, mean temperature 39°, lowest 30°, and week ended 26th, mean temperature 29°, lowest 2°—in unheated rooms where the temperature was below the freezing point. It was found that evaporation was so far retarded that the sheets were not entirely dry at the end of five hours' exposure; but streak agar-inoculations of diphtheria, typhoid and coli communis bacilli in inclined tubes were sterilized to the depth of 1½ inches in this period of exposure. Beneath this point there was growth in all cases after 72 hours' incubation. Growth of similar inoculations in the shallower culture-boxes, furnished for diphtheria-diagnosis, was entirely inhibited. For practical surface-disinfection the formalin-sheet process seems to be sufficiently effective." (*Phila. Med. Jour.*, Vol. 2, page 1384.)

A very interesting and extended investigation has been going on for some time in the Hygienic Laboratory of the University of Michigan, in which some 30 experiments have been undertaken in relation to the "Action of Formaldehyde

on Enzymes and on Certain Proteids" by Mr. C. L. Bliss and Dr. F. G. Novy, of Ann Arbor, Mich. The following general conclusions were drawn from their work: "Fibrin is altered by Formaldehyde and is then less easily digested by pepsin and by trypsin. Papaïn is apparently unable to digest fibrin even when this is exposed to very weak Formaldehyde (1:1000) for a very short time.

The casein of milk, on contact with Formaldehyde, undergoes rapid alteration and is as a result not coagulated by rennet, or but very slowly. Such altered casein, like similar fibrin, is not readily digested by the proteolytic ferments. The longer the Formaldehyde acts on casein and on fibrin the more marked is the result.

Pepsin is not affected by a 1 per cent. solution of Formaldehyde, even when the mixture has stood for four weeks. Even a 5 per cent. solution of Formaldehyde acting for three weeks has no effect on pepsin. Contrary results obtained by others are due to an alteration of the fibrin by the Formaldehyde. A putrid solution of pepsin in distilled water one month old digests fibrin as readily as a fresh solution.

Rennet is not affectd even by a 4 per cent. solution of Formaldehyde acting for several weeks. The absence of coagulation at times is due to the action of Formaldehyde on the casein of the milk and not on the rennet ferment.

Papaïn is very quickly altered by Formaldehyde, even in very dilute solution. Moreover, it is unable to digest fibrin that has been exposed to the action of a very dilute solution of Formaldehyde for a short time.

Trypsin is altered by Formaldehyde to such an extent that digestion of fibrin will not take place, or but very slowly. The extent to which trypsin is affected by Formaldehyde depends largely upon the amount of organic matter present, as well as on the amount of ferment in the solution" (*Jour. of Exper. Med.*, Vol. Fourth, No. 1, page 47).

Drs. F. G. Novy and H. H. Waite, it will be remembered, carried on some careful experiments on the disinfection of

rooms reported last year before the Michigan State Board of Health.

At the annual meeting of the New York State Medical Society held in Albany in January last, Dr. William H. Park, of New York city, read a paper on "The Use of Formaldehyde Gas as a Disinfectant for Dwellings, Vehicles and Household Goods." He draws five conclusions. His fifth conclusion bears repeating here:

"*Advantages of Formaldehyd Gas over Sulphur Dioxid for the Disinfection of Dwellings.*—Formaldehyd gas is superior to sulphur dioxid as a disinfectant for dwellings, first, because it is more effective in its action; second, because it is less injurious in its effects on household goods; third, because, when necessary, it can easily be supplied from a generator placed outside of the room and watched by an attendant, thus avoiding, in some cases, danger of fire. Apart from the cost of the apparatus and the greater time involved formaldehyd gas generated from commercial formalin is not much more expensive than sulphur dioxid, *viz.*, 20 cents to $1 per 1,000 cubic feet against 10 cents with sulphur.

"Formaldehyd gas is the best disinfectant at present known for the surface disinfection of infected dwellings. For heavy goods it is far inferior in penetrative power to steam and dry heat at 230° F., but for the disinfection of fine wearing apparel, furs, leather, upholstery, books, and the like, which are injured by great heat, it is, when properly employed, better adapted than any other disinfectant now known." (*Med. News*, Vol. LXXIV, page 579.)

Dr. Czaplewski, of Königsberg, Prussia, has written an article on "The Disinfection of Dwellings with Formaldehyde" in which he disapproves of all the apparatus known to him for generating this gas, and offers one of his own based on the principle of spraying. (*Muench. Med. Wochensch.*, Vol. 45, page 1306.)

Dr. Schumburg, of Berlin, Germany, has written an arti-

cle on the "Technique of Formaldehyde-Disinfection" which will be of interest to those following up this line. (*Deut. Med. Wochensch.*, Vol. XXIV, page 834.)

Dr. Arthur Schlossmann, of Dresden, Prussia, is still a prominent observer with this form of disinfection. His results and conclusions were alluded to here a year ago, and he apparently not only confirms them but strengthens his belief in the efficiency of Formaldehyde, glycerin and steam in the following combination: Formaldehyde 30 parts, water 60 parts and glycerin 10 parts—the so-called "Glycoformalin." (*Muench. Med. Wochensch.*, Vol. XLV, page 1640.)

Drs. M. Elsner and Spiering, of Berlin, Germany, have carried on "Experiments with some Apparatus for Formalin-Disinfection" in which, after trying various forms of apparatus, have concluded that the one using Glycoformalin is to be preferred. The 10 per cent. of glycerin is added to prevent the Formalin from changing. They also believe that the advantage in using Glycoformalin is that steam may be employed and is of value rather than a detriment when disinfecting large articles, as beds and the like. They feel called upon, however, to point out disadvantages, two of which are: the sticky condition many articles are found in, due to the coating of glycerin, and the persistency of the odor. (*Deut. Med. Wochensch.*, Vol. XXIV, page 728.)

Dr. W. H. Symons, of Bath, England, reports his results in "The Disinfection of Books and other Articles Injured by Steam" in which he claims that although Formaldehyde seems to give full promise for disinfecting purposes, and does prove to do such effective work in laboratory experiments, his experience leads him to think that its action is rather superficial and variable when used on the large scale and by the ordinary means. His plan is to place articles to be disinfected in a special steam disinfector first when the Formaldehyde vapor is introduced under conditions which draw it into the numerous parts by the partial vacuum produced. His description will be of value to those

interested in following up this subject. (*Brit. Med. Jour.*, Vol. II for 1899, page 588.)

Dr. F. Montizambert, of Ottawa, Canada, reported his experience in Formaldehyde disinfection before the Canadian Medical Association at its meeting held in Toronto in August last. It had relation to an outbreak of smallpox on the S. S. "Lake Huron" in the river St. Lawrence below Quebec. He concludes as follows:

"I am aware that this disinfectant, formaldehyd, has been employed for the purification of vessels; notably some of the United States transports after recent service at Cuba. But I have not seen any instance recorded of its use on so large a scale in the face of actual infection with smallpox. Nor do I know of its results being put to so crucial a test as upon this occasion.

"In my opinion the use of sulphur dioxid driven in from the sulphur furnace under the strong pressure of the exhaust fan must remain our chief reliance for large apartments, such as holds and steerages. But this instance of the successful employment of formaldehyd as an alternative is not without its value. I do not forget how careful we have to be not to hastily draw conclusions from any one case or occurrence, still it is only by the noting of single cases that cumulative evidence can be obtained, and I have, therefore, thought this test of formaldehyd disinfection on a somewhat extensive scale to be of sufficient interest for me to bring it before this Association." (*Phila. Monthly Med. Jour.*, Vol. I, page 558.)

The subject of sterilization of instruments by means of this agent has been investigated by Dr. H. O. Reik, of Baltimore, Md., who has continued his work as alluded to here last year. He makes the following statement:

"In view of our experience I am inclined to emphasize our former conclusions, which were as follows: (1) A lamp will burn in any absolutely closed chamber long enough to generate more than sufficient formaldehyd for its disinfec-

tion. (2) In a chamber of 1 cubic foot space 5 grains of paraform will in fifteen minutes accomplish disinfection. (3) The expense of such disinfection, including the cost of paraform and alcohol, will not exceed 1 cent, and the labor involved is almost nothing. (4) For the disinfection of small instruments, such as those used by ophthalmologists, laryngologists, and dentists, it is by far the most convenient and speedy method. (5) This method carries out probably better than any other designed for the work the principles of disinfection,—the absolutely certain destruction of all pathogenic organisms, in the shortest possible time, at the least expense, and with a minimum of injury to the object of disinfection." (*Phila. Med. Jour.*, Vol. 3, page 287.)

Dr. Johannes Hahn, of Mayence, Germany, has obtained gratifying results in the treatment of tuberculous joints by injections of a mixture of 1 to 5 per cent. of Formalin in glycerin. He first aspirates to draw out a portion of the pus. Then he washes out the cavity with a boric acid solution; after which he injects about one-half as much of this Formalin mixture as the pus removed. A second injection may be found to be of advantage. He much prefers this mixture to the previously used one of iodoform and glycerin. (*Centralbl. für Chirurg.*, Vol. 26, page 689.)

Mr. J. Lardner Green, of Salisbury, England, read a paper at the annual meeting of the Section on Medicine of the British Medical Association held at Portsmouth in August last, on the value of a 40 per cent. aqueous solution of Formaldehyde in the treatment of pulmonary tuberculosis. He prefers to use it in the form of a spray rather than by simple inhalation. A discussion on the subject followed. (London *Lancet*, Vol. II for 1899, page 521.)

Dr. Howard S. Olliphant, of New Orleans, La., reports results of his experiments in the use of this agent in the treatment of pertussis, in which his results were so gratifying that he felt called upon to publish his report. He states that he looks upon "pertussis as simply an infection

of the fauces—a place perfectly accessible to disinfection, and therefore curable in a few days." * * * "Out of twenty cases treated with this remedy not one failed to be cured in less than eight days. I have seen cases in consultation with a *confrère* who was much pleased with the treatment, and pronounced it a specific. In conclusion, I would warn against too strong a solution being used in cases of young and debilitated children." (*N. Y. Med. Jour.*, Vol. LXIX, page 306.)

Dr. Adolph Bronner, of Bradford, England, reported his observations on "The Local Use of Formalin in the Treatment of Atrophic Rhinitis (often called Ozaena)" at the annual meeting of the Section of Laryngology and Otology of the British Medical Association held at Portsmouth in August last. A discussion followed which will be found to be interesting reading. (*Brit. Med. Jour.*, Vol. II for 1899, page 999.)

Dr. W. Fell, of Wellington, New Zealand, reports a case of puerperal sepsis in which strips of linen soaked in a 40 per cent. solution of Formaldehyde were packed into the vagina and left there for twelve hours. The temperature was rapidly reduced and the patient recovered with only a slight sensation of smarting. (*The Australasian Med. Gaz.*, Vol. XVIII, page 102.) Some observers recommend a vaginal douche of 1:500 in such cases as Dr. Fell's.

Dr J. C. Webster, of Montreal, Canada, has made quite a thorough study of infective peritonitis and has made an extended report in which he speaks with special reference to a suggested plan of improving the present methods of surgical treatment. He experimented on the normal peritoneum of dogs, and finally used it in the human subject in six cases with good results, making use of solutions varying from 1:2000 to 1:2500. (*American Gyn. and Obstet. Jour.*, Vol. XIII, pages 303 and 429.)

Dr. Gerdeck, a German infantry surgeon in the Department of the Rhine, advocates the use of Formalin in sweat-

ing of the feet. His plan of procedure is to paint the sole of the foot with a 40 per cent. solution of Formaldehyde three times each day. He applies none to the dorsum of the foot and only once between the toes. To counteract the odor of the sweat he distributes 4 or 5 drops of this solution in the shoes and warms them so as to spread the vapor throughout. This has the additional advantage of preserving the leather. Such a plan if adopted appears to have a lasting effect for three or four weeks, after which it can be repeated if called for. This treatment results in drying up the surface of the skin, and the sweating ceases. No toxic effects have been noticed and the deodorizing effect is quite complete. His experience throughout his infantry service was very gratifying. (*Deutsch. Militärärztl. Zeitschr.*, Vol. 27, page 165.)

The veterinary surgeons have also made good use of this agent.

Dr. Charles H. Higgins, of Canada, read a paper on "Formalin as a Surgical Dressing" before the annual meeting of the American Veterinary Medical Association held in New York city, in September last. He remarks: "This is my first and only experience with this new material, and from the success in this one case I think that it deserves a place in the hospital of every veterinarian. The treatment is a very painful one to the patient, but the good results more than counterbalance the suffering entailed." (*Jour. of Compar. Med. and Veterin. Archives*, Vol. XX, page 567.)

Dr. David D. Brough, of Boston, Mass., reports upon the results of his experiments for the Boston Board of Health at various periods for almost two years, in relation to the general question of this agent as a disinfectant. He states that he has tested a large number of generators and lamps and has generated gas directly from the solutions and from the solid forms, and whereas he could not quite substantiate all the claims of the manufacturers, he finds that the

opponents of the use of this agent have no real substantial ground upon which to base their opposition. (*N. Y. Med. Jour.*, Vol. LXVIII, page 931.)

A series of experiments has been carried on in the Pathological Laboratory of the University of Cambridge, England, by Dr. A. A. Kanthack, on the use of Formalin lamps for the disinfection of rooms, in which he compares two forms of lamps which are now in the English market. (London *Lancet*, Vol. II for 1898, page 1049.

These individual lamps are not seen in this country, but similar ones are offered which come within the means of the majority.

The simplest and cheapest lamp for deodorizing yet offered appears to be the one originally designed for use in the New York Hospital by Sidney Rauschenberg, Ph.D. Its use in that Hospital has extended now over several years, and some minor points in the original lamp have been perfected. It was originally too small in capacity, but is now offered in more than one size, thus giving opportunities for more extended disinfecting. The lamp itself looks very much like a brass or metal kerosene lamp but making use of a small cylindrical chimney with a mica window through which to watch the burning within. The methyl alcohol is supplied from the reservoir below to a long cylindrical wick made of asbestos, called the converter, through a cotton wick, and after lighting, the converter is simply permitted to glow, consuming the Alcohol continuously as long as the supply lasts.

Prof. W. Prausnitz, of Graz, Austria-Hungary, recommends a very simple spraying apparatus, which is much cheaper than the ones ordinarily offered throughout the German Empire. (*Muench. Med. Wochensch.*, Vol. 46, page 3.)

Quite a variety of combinations with Formaldehyde have been suggested, each one of which presents certain claims needing verification by more general use.

A mixture of Formaldehyde, thymol, zinc oxide and starch has been given the short name of "Formoform."

"Paraform" (the polymeric form of Formaldehyde) has recently been recommended by Dr. P. G. Unna as a caustic agent for the treatment of cutaneous growths of various kinds, such as warts and the like. He recommends a 5 per cent. solution and states that it is quite harmless and may be given into the patient's hands for application.

Dr. E. A. Darling, of Boston, Mass., has carried on a series of experiments to prove that it is not only possible but practicable to sterilize catgut by means of dry heat with but slight change in its tensil strength, but he takes pains to state that dry paraform gas, which has been used by some observers, is of doubtful value, for all methods of sterilization which involve soaking in antiseptic solutions tend to weaken the catgut to a greater or less degree. (*Jour. of the Boston Society of Medical Sciences*, Vol. III, page 269.)

A general report has now been made of the permanency of museum specimens put up in Formaldehyde solution. In the Medical Museum of St. Bartholomew's Hospital in London considerable success has been obtained in procuring permanency of color in specimens which have now lasted some two years. (*Brit. Med. Jour.*, Vol. II for 1898, page 1449.)

It must not be forgotten that poisoning effects are occasionally produced when using this agent. Even a fatal case is on record abroad of a boy having drank 60 grammes (2 ounces) of a 4 per cent. solution.

Dr. Charles Bock, of Indiana, relates a case of fatal poisoning in the Indiana School for Feeble-minded Youth. (*Fort Wayne Med. Jour.-Magazine*, Vol. XIX, page 249.)

Gaiethol—the derivative of Guaiacol in which the methyl radical is replaced by an ethyl radical—has not been heard of during the past year.

Gallobromol (Di-Bromo-Gallic Acid) the agent which has been used internally for some little time past in a small way as a substitute for the alkaline bromides both by the dermatologists and genito-urinary surgeons, is still only rarely commented upon. The following formula is recommended in the treatment of gonorrhea in the male:

Gallobromol	4 grammes	(61.7 grains)
Distilled Water.....	100 "	(about 3½ ounces)
Glycerin	100 "	(" 3½ ")

Glonoin (Nitroglycerin) needs little special comment here in relation to its claims, but the subject of intoxication by this agent has recently been brought out pretty strongly. Dr. Geo. C. Lows, of Paulsboro, N. J., has termed this condition "glonoinism." His observations were obtained from the symptoms noticed among the workers in a nitroglycerin manufactory located on the banks of the Delaware river near the town of Gibbstown, not far from Paulsboro. Those interested in this subject will find his remarks in the (Phila.) *International Clinics* (Vol. IV, Eighth Series, page 1.)

This agent has been suggested and found of value in the hands of some observers in checking haemoptysis in pulmonary tuberculosis. Half-hour doses of one-half drop of a 1 per cent. alcoholic solution were used.

Guaiacol—now obtained synthetically from Pyro-Catechin—is still used by some in preference to creosote in all the affections in which the latter has been employed.

Dr. Arthur H. Gault has made extensive use of it in pulmonary tuberculosis and pronounces it of undoubted value after having tried ichthyol with no distinct advantage. He writes concerning it in an article on "Experiences of a Consumptive Home." (*Australasian Med. Gaz.*, Vol. XVIII, page 239.)

Numerous other observers report in the same favorable line.

The following combination has been recommended: Guaiacol Carbonate 3 parts, Ammonium Sulpho-ichthyolate 3 parts, Glycerin 8 parts and Peppermint Water 2 parts. This to be given in daily doses of from XX to XXX drops.

Dr. Moncorvo, of Rio de Janeiro, Brazil, has observed, after some extended observations in children, that Guaiacol has no influence on malarial fever, but does have a decided effect upon the fever accompanying tubercular affections. He therefore would make use of it as a diagnostic measure not only where he could exclude one or the other but even where the two affections are associated. He bases his observations particularly upon the fact that where local applications of this agent are combined with internal administration of quinine sulphate, both affections are arrested when they occur together. (*Bull. de l'Acad. de Méd.*, Vol. XLII, page 230.)

Dr. Charles J. Whalen, of Chicago, Ill., reports upon the successful use of this agent in three very severe cases of malaria. He does not claim to go as far as to call it a specific, but he does state that it is of greater value than any of the ordinary methods of treatment, for they have failed in some cases where this agent has succeeded. He presented four cases, but one of these was not cured although very markedly benefited. He believes that much larger doses would probably have had the desired results in this case. (*Chicago Med. Recorder*, Vol. XVII, page 19.)

Dr. Prozorovsky has made use of a mixture of Guaiacol 1 part and Tincture of Iodine 4 parts, in the treatment of eleven cases of serous pleurisy, by twice a day painting it over the skin and covering it with oiled silk or other air-tight material. The exudation was rapidly absorbed—more rapidly than he would expect from other methods. He found that five or six applications were usually sufficient to complete the absorption. (*La Presse Méd.*, Vol. 7, first half, page 8.)

Dr. A. Villa, of Genoa, Italy, has made use of a 20 per

cent. solution of this agent in oil for arresting erysipelas around the umbilicus in the new born child. On the second day marked improvement was noted, and completely successful results on the sixth day. (*La Scm. Méd.*, Vol. 18, page 51.)

Dr. V. Leplat, of Wattrelos, France, has obtained gratifying results in the treatment of two cases of lupus by using equal quantities of this agent and glycerin. (*La Sem. Méd.*, Vol. 19, page 232.)

Dr. E. Bazin, of Bordeaux, France, recommends that 3 per cent. of Guaiacol be incorporated in mercuric iodide injections to counteract pain. He has used this combination in the treatment of syphilis for some length of time, with gratifying results. The following formula is recommended:

Sterilized Olive Oil.....	100 grammes	(about 3½ ounces)
Mercuric Iodide	0.50 "	(" 7.7 grains)
Pure Guaiacol (synthetic)..	3.00 "	(" 46.3 ")

(*La Sem. Méd.*, Vol. 19, page 104.)

Dr. J. Clifford Perry, of the U. S. Marine Hospital Service contributes an article on "The Efficacy of Guaiacol in the Treatment of Epididymitis." (N. Y. *Med. Record*, Vol. 55, page 8.) He tabulates some twenty cases which he has observed and concludes that "For the prompt curt of epididymitis I wish to emphasize the fact that guaiacol is the most valuable remedy we possess."

Mr. G. Hearn Parry, of Ventnor, Isle of Wight, advocates "Guaiacol Vapor Baths in the Treatment of Bronchiectasis." He publishes the details of a case observed in the Royal National Hospital for Consumption and Diseases of the Chest at Ventnor, which rapidly improved under this treatment after "baths of commercial creosote as advocated by other authorities had had to be abandoned on account of the unfavorable results produced." (London *Lancet*, Vol. II for 1899, page 210.)

The Valerianates of both Guaiacol and Creosote are still

recommended, especially in pulmonary tuberculosis. Dr. A. B. Briggs, of Ashaway, R. I., read a paper on their use, before the Washington County (R. I.) Medical Society relating eight cases. He remarks "all the patients in the chronic cases are still taking the valerianates, for they recognize the fact that as soon as they discontinue them they get worse, and by their continued use they are able to at least hold their own against the disease, while two of them are able to follow their vocations." (*N. Y. Med. Jour.*, Vol. LXIX, page 706.)

Dr. Eschle, Director of the District Hospital at Hub, recommends Guaiacol Carbonate in all tuberculous affections. (*Therap. Monats.*, Vol. XIII, page 368.)

A glycerol ether of Guaiacol under the coined name of "Guaiamar" (patented) is recommended in the treatment of typhoid fever. Dr. George F. Butler, of Chicago, Ill., has made use of it in twenty cases both in his private practice and in the Cook County Hospital, and states that "while, perhaps, this is too small a number upon which to base an opinion of the value of any particular medicament, I can say that whether due to a fortunate coincidence or not, each one of these cases ran an unusually mild course." He concludes as follows:

"In calling the attention of the profession to this valuable remedy, I have recorded only my personal experience with the drug in private and hospital practice, which had been so auspicious that I can conscientiously and without reserve recommend guaiamar as a remedy possessing a wide range of usefulness, probably surpassing any of the other derivatives of guaiacol.

I fully realize the responsibility I assume in so emphatic an indorsement of guaiamar. Physicians who may have been induced to prescribe benzosol and kryofine from my recommendation of them during the past two years I am sure have had no cause to regret it, nor do I believe that any physician who will faithfully give guaiamar a fair trial in

cases which seem to call for a drug of this character will be disappointed, but, on the contrary, will feel that an exceptionally valuable drug has been added to materia medica." (*N. Y. Med. Jour.*, Vol. LXX, page 438.)

Guaiacol Camphorate is a new form now offered which has not yet received enough attention to speak of its advantages or disadvantages. It is claimed, however, that this particular combination will prove to be valuable. Clinical reports no doubt will be made in the near future.

Guaiaquin (Quinine Guaiacol-Bi-Sulphonate)—the substitute for Guaiacol which received little comment last year, has not been specially commented upon except by Dr. Beverley Robinson, of New York city. He presented at the meeting of the Practitioner's Society, a case of secondary carcinomatous infiltration which had been treated by this agent:

"Dr. Robinson said he was induced to try guaiaquin in this case as an experiment, and he simply reported the result in the hope of inducing other members to give it a trial under similar circumstances, because these cases were often very troublesome and painful, and any remedy which would mitigate the symptoms should certainly be welcomed. Furthermore, recent investigations seemed to demonstrate that carcinoma was a parasitic disease, and from that standpoint medical intervention, with the use of drugs or serotherapy, again assumed practical value. The speaker said he had tried guaiaquin in several cases of malaria with rather uncertain results." (N. Y. *Med. Record*, Vol. 56, page 134.)

Guaiperol (Piperidin Guaiacolate) has not been heard of in the current medical literature of the past year.

Heroin is claimed to be a Di-Acetic Ester of Morphine and is offered as a new derivative of morphine. Little is given as yet of its mode of preparation or of the details of its manufacture. It is presented in the form of a colorless, crystalline powder with a slight bitter taste, quite insoluble in water, but does dissolve if a few drops of acetic acid be

added. Its chief claims are that it does not produce the well-known constipating effects of morphine or the disagreeable sequelae of most other narcotics. It seems to possess the power of lowering the temperature more markedly than morphine.

Dr. Max Einhorn, of New York city, is one of the very earliest to use this new agent in this country and he is also about the first to publish his experience with it. He states that he has used it "since January 1, 1899, either in powder form or tablets, or heroin hydrochlorid in solutions, giving 5 milligrammes ($\frac{1}{12}$ of a grain) twice daily." His formula is as follows: Heroin 5 milligrammes, Granulated White Sugar 300 milligrammes. He makes 14 powders giving one powder twice daily, or again Heroin Hydrochloride 75 milligrammes, Distilled Water 60 grammes, giving one teaspoonful twice daily. This was used chiefly in his service at the German Dispensary, although he made use of it in quite a number of his private cases. He presents a concise table of the Dispensary cases which include pulmonary tuberculosis, asthma, bronchitis, tabes dorsalis and others. He concludes as follows:

"It will readily be seen from the above that we possess in heroin a very valuable therapeutic agent. It principally allays cough and eases respiration, but it has also general analgesic properties which render it of benefit in most painful affections. Except slight dizziness and occasionally dryness in the throat, which I found but rarely, I have never seen any unpleasant symptoms even from a prolonged use of heroin, and I can heartily recommend it as a very valuable remedy." (*Phila. Med. Jour.*, Vol. 4, page 829.)

Dr. H. Dreser, of Elberfeld, Rhenish Prussia, appears to have been the investigator in Europe. His experiments seemed to prove that 0.001 gramme (1-64 of a grain) very decidedly lessened the respiratory movements in a rabbit, whereas codein had to be increased up to 0.01 gramme (about $\frac{1}{8}$ of a grain) to produce the same effect. He found

that the ordinary dose would have to be increased about one hundred times before it would approach a toxic effect. A dose of 0.01 gramme (about $\frac{1}{8}$ of a grain) was found to be sufficient for adults in cases of cough, and is of benefit in all subjects who breathe with effort after recent attacks of pneumonia, pneumothorax or cardiac affections. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. III, new series, page 977.)

Dr. H. Leo, of Bonn, Rhenish Prussia, has had some very gratifying results from this agent. He has used it in many cases during the last few months, but finds that the dose recommended by Dr. Dreser produces, from his observations, unpleasant effects, such as giddiness, nausea and even fainting. Therefore he confines himself to 0.005 gramme (about 1-12 of a grain) for each dose. He also finds that its action is only slight in relieving cough, but especially satisfactory in various forms of dyspnoea. In regard to its toxic effects, he states that notwithstanding the fact that experiment has apparently proved and as careful an investigator as Dr. Dreser states, that 100 times the medicinal dose is required to produce dangerous effects, still he finds that it is best not to exceed 0.03 gramme (about 7-16 of a grain). (*Duct. Med. Wochensch.*, Vol. XXV, page 185.)

Dr. A. Eulenburg, of Berlin, Germany, recommends the subcutaneous injection of Heroin Hydrochlorate and has published its results after using it about 300 times. He approves of the dose used by Dr. Leo and agrees with him as to its value in cough and dyspnoea, but cannot agree with him in his conclusion as to the treatment of neuralgia, for he has obtained very favorable results in the different forms of neuralgia in which he has tried it. He has been gratified with its use also in the treatment of those addicted to the Morphine habit, and finds that two doses of Heroin to such patients will quite replace four doses of morphine. Again his experience would show that its narcotic effect is not equal to that of morphine and that after a more

or less extended use in most cases the dose must be increased. (*Deut. Med. Wochensch.*, Vol. XXV, page 187.)

Dr. A. Holtkamp, of Eitorf (a town on the river Sieg, which flows into the Rhine near Bonn), Prussia, has made use of this agent in 122 cases of acute and chronic laryngitis and bronchitis, in 12 cases of pleurisy with severe cough and pain, in 5 cases of pertussis, in 7 cases of muscular rheumatism and other affections. He claims that only in a few instances this agent disappointed him. (*Deut. Med. Wochensch.*, Vol. XXV, Therap. Beilage, page 25.)

Dr. Sigismund Wierzbicki, of Crakow, Austrian Galicia, also speaks highly of this agent in the treatment of cough and for reducing the serum of the expectoration. He states that aqueous solutions with the proper amount of acetic acid added may be used with good effect hypodermatically. (*Klin.-therap. Wochensch.*, Vol. VI, page 862.)

Dr. Georg Strube, of Berlin, Germany, reports upon the use of Heroin in the Berlin University Clinic with generally satisfactory results. He claims that it has proved itself to be a good substitute for morphine and codeine in quite all cases of irritable cough, but he cannot resist cautioning fellow practitioners to watch its administration with care, for he fears there may be a certain amount of toleration established, and chronic intoxication may be produced. (*Berlin. klin. Wochensch.*, Vol. XXXV, page 993.)

Dr. Morris Manges, of New York city, presents the results of his observations throughout the previous three months in a paper on "The Treatment of Coughs with Heroin," and makes the statement: "In allaying coughs the remedy was very prompt and efficacious in a large number of cases; in some of these cases the larger dose of a sixth of a grain was required. It is to be noted that the unpleasant after-effects occurred with these larger doses. The relief usually followed within a half hour after taking the drug. The cases were of the most varied kind, including acute and chronic bronchitis, emphysema, bronchiectasis, pulmonary

tuberculosis, pleurisy (acute dry and with effusion), coughing after anaesthetics, pneumonia, etc. In purely neurotic coughs the results were not so good. In some of the cases the relief was most surprising, being obtained where codeine and other drugs had failed." (*N. Y. Med. Jour.*, Vol. LXVIII, page 768.)

Dr. Julius Weiss, of Vienna, Austria, has published "A Further Contribution on Pure Heroin and Hydrochlorate of Heroin." (*Die Heilkunde*, Vol. III, page 268.) He appears to have simply verified the good results reported by others.

Dr. B. Turnauer, of Vienna, Austria, reports on his experience with this agent, varying only slightly from the general reports from others. (*Wien. Medizin Presse*, Vol. XL, page 458.)

Dr. Erich Harnack, of Halle, Prussian Saxony, feels called upon to publish the fact that this agent is not as harmless as was first claimed. He carried on a series of experiments on animals which do not bear out the claims of Dr. Dreser, thus showing that the effects are different when employed in human beings. His results however do bear out the statement made by some others that it has a far greater depressant effect on the respiration and heart than morphine has. He agrees with Dr. Leo in believing that Dr. Dreser's maximum dose is too large, and that it should not exceed 0.005 gramme (about 1-12 of a grain) until further observations have been made to warrant larger doses. (*Muench. Med. Wochensch.*, Vol. 46, page 881.)

Holocaine, the new synthetic substitute for cocaine as a local anaesthetic, is still prominently before the medical profession.

Dr. Hasket Derby, of Boston, Mass., has made quite a study of this agent in ophthalmological practice. He believes it to be superior to cocaine, and draws the following conclusions: It does not cause mydriasis, and therefore does not produce increased tension; it does not at all affect the

accommodation; it produces a deeper anaesthetic effect on the iris than cocaine; it has proved efficient in cases of painful inflammation where cocaine had failed; it appears to produce no toxic effects unless administered by the mouth or subcutaneously, and finally it has no effect whatever on the corneal epithelium. These observations have been reported previously, but Dr. Derby's confirmation of them is of value. (*Archives of Ophthal.*, Vol. XXVIII, page 45.)

Dr. E. C. Ellett, of Memphis, Tenn., reports his results after a somewhat extended period. He performed 11 cataract extractions, 11 iridectomies, 2 paracentesides of the cornea, 5 capsulotomies, 1 excision of prolapsed iris, 3 advancements of ocular muscles, several tenotomies and pterygium operations and others. He concludes as follows:

"From the experience that these cases afford, I am well pleased with the action of holocain as a local anesthetic in eye surgery, and I beg to repeat that the profound insensibility of the iris is especially gratifying. In all my operations the wounds have healed well. My instruments are sterilized by heat and then by alcohol and latterly formol, and the field of operation is, as far as is practicable with mucous surfaces, rendered sterile. I have not used holocain in the surgery of the nose and throat." (*Phila. Med. Jour.*, Vol. 2, page 1143.)

Dr. John Guttmann, of New York city, read a paper before the German Medical Society of New York on "The Use of Holocaine as a Local Anaesthetic in Eye, Ear, Nose and Throat Operations." He closes by stating:

"In conclusion, I wish to say that during the last year I have employed holocaine instead of cocaine in about a hundred and fifty operations, and have never observed the slightest toxic or alarming manifestation. According to the investigations of several writers, it is not advisable to use holocaine hypodermically. Although holocaine will never entirely replace cocaine, yet it will frequently be of equal service, and, under certain circumstances, will even

be preferred to it." (*N. Y. Med. Jour.*, Vol. LXIX, page 848.)

Dr. Herman Knapp, of New York city, has written a "Note on the Use of Holocain," in which he makes a comparison between Holocaine and cocaine after more than a year's use. He makes the point that cocaine is purely an anaesthetic and not a remedy, whereas Holocaine has a very beneficial effect on septic ulcers of the cornea. He concludes that in this agent we have not only an excellent local anaesthetic, but also a very valuable therapeutic adjuvant to combine with other remedies. (*Archives of Ophthal.*, Vol. XXVIII, page 315.)

Hydrargyrol (Mercury Para-Phenyl-Thionate), the antiseptic alluded to here last year, has not been heard of in current literature of the past year.

Hydrogen Dioxide in solution has had an increasing use throughout the past year and has become well established as a useful agent. Its sphere of usefulness has much broadened.

Prof. F. Touchard, of Paris, France, wrote a prize essay on its use as an antiseptic and haemostatic. He believes that it has not yet reached the position which it deserves and which it will eventually take in surgery. His observations would go to show that it acts as a vaso-constrictor. He claims it to be one of the most powerful bactericides, and especially valuable in all microbic affections of the mouth and throat—diphtheria, aphthous stomatitis and the like. He would urge its use in general surgery, otology and dentistry. (*Bull. Gén. de Therap.*, Vol. CXXXVII, pages 193, 286, 367 and 401.)

The ophthalmologists have made good use of it in ulcerative blepharitis, purulent conjunctivitis and granular conjunctivitis. They report that in the majority of cases remarkably good results followed irrigation under the eyelids.

In cases of persistent vomiting it has been recommended

to make use of 10 grammes (1 dessert spoonful) of a 10 volume solution put into 473 Cc. (1 pint) of water. From this dilute solution sips are taken throughout the day.

At a meeting of the Philadelphia County Medical Society, on April 12th last, Dr. George W. Spencer read a paper on "The Dangers of Hydrogen Peroxid in Surgical Cases." He believes that when the oxygen is liberated within cavities having small openings, injurious mechanical effects are produced. He related several cases to prove that such gas carries infection to points distant from the original focus. In the discussion which followed the reading of the paper some additional opposition was developed to its use in surgery. Dr. S. Solis-Cohen stated that he did not agree with the claims of many that Hydrogen Dioxide was a germicide, for its sole property was that of a cleansing agent.

Ichthalbin (Ichthyol-Albumen), the substitute for ichthyol, although evidently possessing some properties not as disagreeable as ichthyol, apparently cannot take the place of the latter, for it has not taken the prominence previously hoped for it. Practically the only definite report during the past year comes from Dr. Th. Homburger, of Carlsruhe, Germany. He evidently has met with great success in some diseases of children. (*Therap. Monats.*, Vol. XIII, page 361.)

Ichthyol (Ammonium Ichthyol-Sulphonate) has lost none of its importance during the past year.

Dr. Hugo Goldmann, of Brennberg, near Oedenburg, West Hungary, has for some time past been making use of a combination of creosote and Ichthyol in the treatment of pulmonary tuberculosis, as follows:

Creosotal	15 grammes	(about 4 drachms).
Ichthyol	15 "	(about 4 ").
Pure Glycerin	30 "	(about 1 ounce).
Peppermint Water . .	10 "	(about 3 drachms).

The dose varies from 20 to 30 drops, according to the age of the patient, and is given three times a day after meals, either in wine or lemonade. (*Wien. klin. Wochensch.*, Vol. XI, page 817.)

Dr. W. Schiele advocates the more general use of this agent even in advanced cases of pulmonary tuberculosis. He claims it acts not only in arresting the destruction of proteid substances, but is a valuable antiseptic. He does not at all depreciate the value of hygienic and dietetic treatment, but does believe that Ichthyol has a very potent effect when used with some expectorant. He does not think that it has yet been proved whether this agent acts directly on the diseased lung tissue, or whether its action is general. (*St. Petersburg. Med. Wochensch.*, Vol. XXIX, page 65.)

Dr. Wertheimber, of Nuremberg, Bavaria, reports upon his marked success with this agent in pulmonary tuberculosis. His experience now extends over quite two years, and he believes that the improvement noted is permanent. He calls attention to the fact that probably all observers will have noticed that the administration of morphine and atropine become less necessary after the use of this agent. (*Muench. Med. Wochensch.*, Vol. 46, page 795.)

Dr. J. Francis Souter, of Sydney, Australia, reports gratifying results from the use of pills of Ichthyol in the treatment of pertussis. He first tried its action on four of his own children, who varied in age from two years and six months to eight years. His initial dose was 65 milligrammes (1 grain), which he increased in a few days to 130 milligrammes (2 grains), and finally to 195 milligrammes (3 grains) and 260 milligrammes (4 grains). In each case he gave it every four hours, and obtained such favorable results that he tried it with equal success on ten other cases, none of which reported any ill-effects. (*Australasian Med. Gaz.*, Vol. XVIII, page 390.)

Dr. B. Goldberg, of Wildungen and Cologne, Germany,

in contributing an article entitled a "Communication on the Treatment of Urogenital Tuberculosis," urges the use of this agent and states that he has continued to use it for some length of time with excellent results. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 129.)

Dr. A. Freudenberg, of Berlin, Germany, reports having treated from 30 to 40 cases of chronic prostatitis by the use of rectal suppositories, made up as follows:

Ammonium Sulpho-Ichthyolate. 0.75 gramme (11.5 grains).
Cocoa Butter ..... 2.50 grammes (38.5 ").

He cautions against the use of "hollow" suppositories. He gives one suppository in the morning after a movement and one just before retiring at night. (*Memorabilien* (German), Vol. XVII, new series, page 99.)

Dr. Heinrich Pohl recommends an Ichthyol tampon to be used in the vagina. The mixture used is a warm 10 per cent. solution of Ichthyol, glycerin and gelatin in which the cotton tampon is inserted several times until it has increased in size to that of a large walnut. After other details are followed the patient herself at once learns to introduce the tampon. (*St. Petersburg. Med. Wochensch.*, Vol. XXIX, page 83.)

Dr. L. Conitzer, of Hamburg, Germany, reports his results in the "Treatment of Anal Fissure with Ichthyol." Preliminary local anaesthesia is obtained with cocaine and then the Ichthyol is applied by any suitable means. After the first application it is not usually necessary to anaesthetize with cocaine. Complete relief is obtained in something short of a week or two as the case may be. (*Muench. Med. Wochensch.*, Vol. 46, page 80.)

This agent has been made use of in the treatment of pruritus, both in ivy poisoning and in the pruritus of the vulva in pregnant women. In the latter class of cases a 15 per cent. ointment of Ichthyol in lard is made use of.

The dental surgeons have been using this agent more fre-

quently during the past year. They prefer it rather than silver nitrate and other remedies for the reason that it has no caustic action and does not color the teeth. It appears to check the haemorrhage occurring after extractions, even when severe, by placing a tampon containing a 25 per cent. solution of Ichthyol in the cavities.

Internal administration of Ichthyol is being used more largely. Dr. J. Crocq, Jr., of Brussels, Belgium, has met with considerable success in the treatment of sciatica by administering internally gelatin capsules each containing 0.1 gramme (1½ grains) of Ichthyol. A local application containing Ichthyol was also used. He claims that this agent is the most effective yet known, and recommends its further use. (*La Sem. Méd.*, Vol. 19, page 208.)

Dr. Crocq again recommends a liniment containing Ichthyol 5 parts, Glycerin 2 parts and Water 3 parts in cases of sciatica. This is to be applied five or six times a day by actively rubbing it in. (*La Presse Méd. Belge*, Vol. 51, page 372.)

Dr. Hoerschel-Mann, of St. Petersburg, Russia, recommends the application of Ichthyol 10 parts and Lanolin 80 parts to shorten the course of the cutaneous manifestations of small-pox and prevent the pitting. He has obtained some success in this direction. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. III, new series, page 1235.)

An ointment has been recommended consisting of Ichthyol 7 parts and Lard 3 parts in the treatment of measles. As the patient is covered from head to foot twice a day it is rather an unattractive form of medication, but it is claimed that if this be applied at a very early stage of the affection, it is quite possible to abort the attack and thus avoid both the skin eruption and the fever. Even if applied later the characteristic rash rapidly disappears.

Iodipin is a combination of iodine with the fatty acids in oil of sesame. It is recommended to be applied subcutaneously in tertiary syphilis. Some experiments have been

tried in this line by Dr. Viktor Klingmüller, of Breslau, Prussia. He claims that this combination has a specific action in this affection; its effects are more lasting than the ordinary iodine compounds; the so-called iodism does not occur and those patients who will not tolerate iodine in the ordinary forms, will obtain benefit when using this agent subcutaneously. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 540.)

Drs. Ferdinand Winkler and Conrad Stein, of Vienna, Austria, have written an article entitled "The Use of Iodipins in Testing the Function of the Stomach," basing their conclusions on the fact that the iodine present is not liberated until it has reached the intestinal tract. A small proportion of oil of peppermint is added to mask the disagreeable taste. It was studied in some 46 cases by testing for the characteristic iodine reaction in the sputum. If the iodine reaction was delayed for over one hour it indicated some disturbance in the motor function of the stomach, for under normal conditions only one-half to three-quarters of an hour elapsed before the reaction occurred. They found that there was a delay of from one to four hours in cases of gastroptosis, dilatation and carcinoma. (*Centralbl. für Innere Med.*, Vol. 20, page 849.)

Iodocrol (Carvacrol Iodide)—one of the innumerable substitutes for iodoform—has not been heard of throughout the medical literature of the past year.

Iodoform apparently still stands firm against its many substitutes. However experiments continue to be in progress in order to obtain an odorless product. Several suggestions have been alluded to in these Comments in years past in the way of masking the odor, particularly on the hands and clothing. The use of dilute acetic acid or vinegar has again been repeated by some observers. It should be remembered that the best effect is to be obtained in general after thoroughly washing with soap and water.

One enterprising firm now offers an Iodoform without

odor, but naturally does not give the process by which they accomplish it. Only an extended use of this product will verify their claims, and if found completely efficient, will be a marked step in advance.

Dr. A. H. Ohmann-Dumesnil of St. Louis, Mo., has written concerning this "Odorless Iodoform" and explains that it only differs from Iodoform proper in that hydrogen is absent in its formula. He finds it to be free from offensive odor and from irritating effects. (*St. Louis Med. and Surg. Journ.*, Vol. LXXVI, page 241).

The literature upon Iodoform is now not only very extensive but is increasing. Therefore it will only be practicable to make reference here to a few of the unusual or important uses of it.

Dr. J.-L. Rénïac of Toulouse, France has made a report on his use of a mixture of Iodoform and liquid vaselin in the treatment of some fourteen cases of tuberculosis of the bladder. Six of his cases were greatly improved, seven showed simple improvement and only one showed no improvement. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. 46, page 107).

Dr. Henry H. Whitehouse of New York City has made use of "Iodoform as an Internal Remedy in Lupus Erythematosus." (*N. Y. Med. Journ.*, Vol. LXIX, page 159).

Dr. N. J. Weill, assistant in the Zurich University Eye Clinic, reports the results of his experiments on "The Introduction of Iodoform into the Anterior Chamber of the Eye in Tubercular Iritis." He finds that absorption goes on slowly and that its influence is beneficial, even to the temporary retarding of the tubercular action, thus affording time to get the general system into a condition to resist further spread of the disease. Other forms of treatment are not excluded but are rather insisted upon as being quite necessary to attack the affection from all quarters. (*Archives of Ophthal.*, Vol. XXVIII, page 135).

The Paris correspondent of the London *Lancet* writes as

follows: "One of the most interesting communications made to the Congress of Medicine at Lille was that by Professor Pitres of Bordeaux, reporting that he had given up using injections of tincture of iodine in treating exophthalmic goitre. This method gives good results in simple goitre but it is liable to bring on abscesses in the exophthalmic variety. Professor Pitres now makes use of injections of an iodoform solution in ether. He injects one cubic centimetre into the tissues of the goitre at intervals of about eight days. The injections must not be made more frequently on account of the swelling provoked in the gland which lasts for some days. The pain caused is acute, but it only lasts for some 12 minutes. In a very short time after the first injection the nervous symptoms cease, sleep returns, the gland hardens little by little, becomes smaller, and the exophthalmos disappears. The patient continues to suffer for some time from cardiac irritability, but the arterial pulsations diminish and the sensations of palpitation disappear. Professor Pitres has treated 12 patients, but in only six of these has he followed up the results enough to draw conclusions of value. These six have remained well for over two years and none of the 120 injections carried out upon them was followed by any untoward result."

Dr. E. DeRenzi of Naples, Italy recommends for the diarrhea accompanying pulmonary tuberculosis, the combination of 2 grammes (30.9 grains) of Iodoform with 4 grammes (61.7 grains) of Tannin, made up into 10 powders, and from 2 to 4 are taken each day. For constipation in the same affection, he recommends: 2 grammes (30.9 grains) of Iodoform with 2 to 4 grammes (30.9 to 61.7 grains) of Naphthalin, made up also into 10 powders, and from 2 to 4 are taken each day. (*La Riforma Medica*, Vol. XIV, page 839).

Dr. Poinsot advises the use of equal parts of Powdered Iodoform and Gelatin made up into the form of pencils which are recommended for many uses. These are apt to be rather soft for some purposes so he suggests equal parts

of Iodoform and Cacao Butter as being somewhat harder. (*Journ. de Méd. de Paris*, Vol. XI, page 271).

Iodoformogen (10 per cent. Iodoform), the combination of iodoform with albumen offered as a substitute for iodoform, has received a little more attention during the past year than the year previous.

Dr. Albert Wagner of Stuttgart, Germany contributes an article on "Iodoformogen, an Odorless Preparation of Iodoform." He emphasizes the fact that its odor is very slight, and that it is less irritating than iodoform. (*Muench. Med. Wochensch.*, Vol. 45, page 1529).

Dr. Julius Mahler of Buda-Pesth, Hungary has made effective use of this agent as a substitute for iodoform in tamponing the vagina. (*Allgem. Med. Central-Zeit.*, Vol. 68, page 381).

Iodogallicin (Bismuth Oxy-Iodo-Methyl-Gallol), the new antiseptic brought forward last year, has not been heard of in the current medical literature of the past year.

Iodol (Tetra-Iodo-Pyrrol)—the iodoform substitute—has received little comment in the literature of the year, although undoubtedly it is being used to some extent. It has recently been recommended to combine it with 1 per cent. of menthol in the treatment of affections of the nose, larynx and pharynx. It is administered by insufflation and is rendered more agreeable to patients by the addition of the menthol.

Iodothymoform is the name given to a new disinfectant combination prepared by the action of thymol upon formaldehyde under certain conditions. 100 parts of thymol are warmed up with 100 parts of formaldehyde (40 per cent.) and well stirred. Hydrochloric acid—100 parts is then added, resulting in a thick, oily liquid, which after cooling becomes a solid mass. This mass is washed and dried and the following solution prepared: Of this dry mass 41.6 parts, alcohol 50 parts, potassium iodide 12 parts, iodine 32.8 parts. After certain manipulations an excess

of ammonia is added and this product "Iodothymoform" separates out, which is washed, dried and powdered.

Clinical reports are not yet offered.

Itrol (Silver Citrate) has not received as much attention during the past year as in the year previous. The only prominent mention comes from Dr. Schill of Dresden, Germany who has written "On Credé's silver salts (Itrol and Actol) as soluble silver." He has had good results in the treatment of the acute stage of gonorrhea. (*Therap. Monats.*, Vol. XIII, page 216).

Jambul (Jamun)—the seeds and bark of the Eugenia Jambolana—has not received much attention for some years past but it is still being used by some.

Dr. Arthur W. Smyth of Louisville, Ky. read a paper before the Louisville Society of Physicians and Surgeons on November 1st last on "Jambul in Diabetes Mellitus" in which he reports good results. (*Amer. Pract. and News*, Vol. XXVI, page 404).

Kryofin, the antipyretic closely allied to phenacetin has not received much attention during the past year in the current literature, although it is surely being used in many quarters.

The only prominent mention throughout the year has been made by Dr. G. A. Gilbert of Danbury, Conn. He writes on "Kryofine: A Clinical Study of its Physiologic and Therapeutic Actions." (*New England Med. Monthly*, Vol. XVIII, page 87).

Lactophenin (Lactyl-Phenetidin)—closely related to phenacetin—is still under observation by the medical profession. Experiments on animals continue, but little definite comment is made in the current medical literature.

Largin, the new silver compound with albumin, containing 11.2 per cent. of silver—closely allied to protargol—is still being used in a certain class of cases.

Dr. L. Fürst reports upon his successful use in the treatment of endometritis, cervical metritis, inflammation of the

vulva and inflammation of the urethra and bladder. He recommends an aqueous solution as weak as 1:200 to begin with and gradually increased.

Other observers have made good use of it in the treatment of gonorrhea, blenorrhea and the like.

Dr. G. Nobl of Vienna, Austria begins with a ¼ of a per cent. solution and increases up to 2 per cent. in the treatment of blenorrhea, injecting three times a day. He obtained his most marked success in acute cases, with complete results in about six weeks. His subacute cases were not so successful. (*Centralbl. für die gesammte Therapie*, Vol. XVII, pages 321 and 385).

The ophthalmologists of Europe have reported some good results in various forms of conjunctivitis, catarrhal ophthalmia, trachoma and affections of the lachrymal duct.

Liquid Air has now entered the field of medicine and surgery, not in the exaggerated way the current lay writers picture, however, but with a true scientific foundation. A definition and the mode of production of this new manifestation of the main support of animal life may not be out of place here. Liquid Air is simply the ordinary air we breathe cooled down to 312 degrees below zero, when it changes from a gaseous to a liquid state. This is accomplished in a series of cylinders, each cylinder of which compresses the air into a smaller and smaller space, and while passing from one cylinder to the other it is kept at a low temperature until it is finally compressed into about one eight-hundredth of its original volume. There was a long period of scientific experimentation before a mechanical device was obtained to accomplish this compression. It was first accomplished in a small experimental way in the laboratory, but now the results are obtained so economically that the use of the product comes well within the means of all. It was estimated that the first ounce of Liquid Air that was produced, cost in the neighborhood of $2500.00. Within a year past the cost has been brought down to about 8c. for

seven gallons (a cubic foot), even allowing that only 25 per cent. of the Air was actually liquified. Since then even better results have been obtained by some manufacturers. When this Liquid is exposed to the ordinary air again it rapidly expands to its original volume and exerts a force of something over 12000 pounds to the square inch, which pressure for certain purposes of locomotion can be largely increased by a superheating process. It is quite easy to understand what a compact and useful agent this would be in a submarine craft. It could be stored in compact form and when liberated could do the following work: The cold developed would act as a preservative of food material, for instance, then when passed on to the engine of locomotion would furnish power, and finally when permitted to escape into the craft itself could be made use of to furnish the air for breathing.

As to its use in medicine, it has been experimented with for some time past and has proved of value in such skin affections as lupus, nevus and the like. Although the cold developed is intense its effect upon the tissues is not at all harmful when used as a local anaesthetic. Even when used locally in neuralgia it appears to have more than a temporary effect. There is some promise of its effective use as a bactericide. It surely has a very encouraging future. More definite clinical reports are awaited with interest.

A company has already been started for the purpose of cremation by this agent. By one of the latest improved processes the body is frozen thoroughly and then crushed between heavy rollers into a fine powder, of course in some receptacle like a bag. By another process the body is placed in a retort where the tissues go through a liquifying process, except the bony parts which simply crumble up.

Lycetol (Di-Methyl-Piperazin Tartrate)—the uric acid solvent—has received little special comment during the past year. The following correspondence with the Editor of the London *Lancet* may however be of interest: "The

action of lycetol in three cases that have come under my observation has been so marked that I am induced to record my experience and to ask any of your readers who may also have used it whether their experience is similar to mine or whether the results obtained when I was using it were merely a matter of accident. The first case was one of gouty sciatica of more or less intensity for about two years. During a desultory conversation not long since the preparation was accidentally alluded to as having been beneficial in similar instances and though at the time sceptical as to any probable good that might result I decided to try it. After its exhibition for ten days or so very great improvement was apparent. At the end of a month every trace of sciatica had disappeared and it has not since returned. The second case was one of rheumatic arthritis involving both carpal joints, especially the left, and the first phalanx of the left thumb. There was great pain, tenderness, and enlargement of both joints. Lycetol was given in the usual doses of from 8 to 15 grains twice daily, at 11 a. m., and 4 p. m., and on two occasions it was taken thrice during the day. Within six days the pain had practically ceased and within seventeen days the swelling and tenderness in each wrist had greatly subsided, the right one being nearly normal in size and the swelling in the left although not so markedly decreased is still becoming reduced. The third case was not that of a patient but of a brother practitioner who for many weeks had been suffering from gout and whose system was saturated with uric acid. I met this gentleman a few weeks since and related my experience to him as above. As he had been ill for some time with no marked abatement he elected to try lycetol. I heard from him a few days since and he says that the preparation 'has done wonders for him' and he 'will not be without it for the future.' No other treatment was adopted or any other drug used while lycetol was being taken and it was administered in alkaline effervescent mineral water.

"I am much interested to learn what it may have done in the hands of others in order to judge whether the rapid improvement in the three instances I have related may be fairly attributed to its use or whether it is to be viewed merely as a series of remarkable coincidences. Should the former prove to be the case we are probably in possession of a valuable adjunct in the treatment of rheumatism and gout and their allied disorders." (London *Lancet*, Vol. I for 1899, page 136).

Lysol (the saponified product of coal-tar, chiefly composed of cresols)—the substitute offered for carbolic acid—is still much used by the surgeon, but little individual comment has been made upon it during the past year.

Lysol has been such a comparatively safe agent that it has had few poisoning cases recorded against it. However one fatal case during the past year has been published. The patient was under the care of Dr. Heinrich Cramer of Bonn, Rhenish Prussia. He had made use of a dilute solution as an intra-uterine douche after labor. The result was so unexpected and unaccounted for that Dr. Cramer therefore does not feel at all discouraged from using this same douche in similar cases in the future. (*Centralbl. für Gynäkol.*, Vol. 22, page 1049).

Malarin is a new antipyretic agent which has been most thoroughly investigated by Dr. Leo Schwarz of Prague, Bohemia. He reported his investigations in a paper entitled "Experimental Research on Malarin, a new Antipyretic." (*Prager Med. Wochensch.*, Vol. XXIII, pages 465 and 478). It is prepared by heating molecular equivalents of Para-Phenetidin and Acetophenon which result in a condensation product in the form of a citrate. It is offered in the form of a yellowish-white powder, insoluble in cold water. The experiments have been chiefly carried on upon animals, and the German chemical manufacturers now offering it are looking for clinical reports, and recom-

mend it to be used not only as an antipyretic but as an antispasmodic. (*Therap. Monats.*, Vol. XII, page 560).

Mallein, the so-called "animal antitoxin" used chiefly for the diagnosis of glanders in horses, has continued to be used in veterinary practice with success by some. Others are skeptical.

Dr. Charles T. McClintock of Detroit, Mich. called the writer's attention to his erroneous statement in the Comments made here a year ago where he stated that this agent was an "antitoxin analogous to Tuberculin." It should rightly be defined as a mixture of the toxins and other active products of the bacilli of glanders, and thus rather a toxin than an antitoxin.

Dr. J. M. Wright, one of the State Veterinary Surgeons of Illinois, has written quite fully on "Glanders and its Suppression; Experiments with Mallein." He writes: "It is claimed by some very eminent men that mallein will cure occult glanders. Is it not possible mallein is given credit for doing what nature has done?" (*Journ. of Compar. Med. and Veterin. Archives*, Vol. XX, pages 12 and 96).

Menthol has not been commented upon to any great extent during the past year, but it has been used in various combinations where its presence has a special modifying effect. One of the more recent combinations is that with ether for the treatment of insect bites: Menthol 1 to 2 parts, Ether 10 parts. This is to be applied by means of a camel's hair brush, care being taken that none of the mixture gets into the eye. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. IV, new series, following page 420).

A combination of 6 parts Menthol with 27 parts collodion is recommended as useful in bruises, applied once or twice a day.

Menthol Valerianate known by the short name of "Validol" continues to be recommended as a local application for its cooling effect to the skin, and as a carminative and stomachic in gastro-intestinal troubles.

A combination has been recommended of 3 parts Menthol to 1 part Phenol as an analgesic and an antiseptic. A solution of 3 to 5 per cent. in warm water has been used as an analgesic in minor operations. A dilute solution is recommended as an efficient gargle. This so-called "Menthophenol" has been used apparently for the past two years in combination with cocaine, by the laryngologists. To procure an anaesthetic which is effective and yet only mildly caustic, it is recommended to use equal parts of Menthol, phenol and cocaine hydrochlorate. Where a more caustic action is desired the Menthol and the cocaine hydrochlorate are reduced to one-half part each, the phenol to one part.

Menthoxol, the name given to the germicide combination of a 1 per cent. alcoholic solution of Menthol with a 3 per cent. solution of hydrogen dioxide alluded to here last year, has not been heard of in the current medical literature of the past year.

Methyl Salicylate (Synthetical Oil of Wintergreen) continues to be found of value especially as an alternate or combined with other agents in the treatment of rheumatism.

Dr. E. Schmoll of Basel, Switzerland confirms the favorable statement made by Dr. G. Linoissier and Dr. M. Lannois alluded to here last year, for he made use of it in 20 cases of rheumatism with good effect. It appears to be used to best advantage in articular rheumatism, and relieves the pain much more rapidly than sodium salicylate. The swelling of the joints and the reduction of the temperature take place more slowly than with sodium salicylate, and thus Dr. Schmoll has preferred to administer the two salicylates together. He has also obtained good results from combining this agent with antipyrin. In subacute and chronic rheumatism and in gouty arthritis it has marked advantages over sodium salicylate. In gonorrhea, syphilis and erythema nodosum his results were fairly satisfactory though not so pronounced. In the joint complications of

such eruptive fevers as scarlet fever, where antipyrin, sodium salicylate and salophen had very little effect, good results were obtained. Gratifying results were obtained in the treatment of neuralgia, sciatica, some forms of neuritis, herpes zoster and the like. In orchitis and in epididymitis excellent results were obtained. (*Correspondenz-Blat. für Schweiz. Aerzte*, Vol. XXIX, page 71).

Dr. Fornaca Luigi of the University of Turin, Italy has obtained successful results with it in the treatment of chorea by combining it with equal parts of vaselin and applying it locally over painful joints, thus relieving the pain and benefiting the chorea, especially in children. Its antipyretic action in erysipelas and scarlet fever have been noted. (*La Riforma Med.*, Vol. XIV, page 578).

Dr. Leredde finds it to be a most effective remedy in the treatment of pruritus in various skin affections. He uses it in the form of a thick ointment made according to the following proportions: 20 parts each of Zinc Oxide and Vaselin to 1 part of Methyl Salicylate. (*Bull. Gén. de Thérap.*, Vol. CXXXVII, page 671).

Methylene Blue (Tetra-Methyl-Thionine Chloride)—the anilin derivative—is still very largely used by practitioners generally.

Dr. G. Lemoine of Lille, France has recently written an interesting article on the employment of this agent up to date, not only including what has been done by other prominent observers, but the results of his own observations. (*Bull. Gén. de Thérap.*, Vol. CXXXVII, page 513).

Its value has been demonstrated by many observers in the treatment of nephritis. Drs. Ernst von Czyhlarz and Julius Donath of Vienna, Austria have written "On the Excretion of Methylene Blue Through Normal and Pathological Kidneys." (*Wien. klin. Wochensch.*, Vol XII, page 649).

Dr. H. van de Velde of Amsterdam, Holland has reported on his "Researches in Regard to the Elimination of Methy-

lene Blue in Normal and Pathological Pregnancy." (N. Y. *Med. Record*, Vol. 56, page 495).

Dr. Landrewie of Toulouse, France not only finds this agent of value in malaria and as an analgesic and antiseptic, but especially effective in cases of cutaneous epithelioma. He would use this treatment first before the knife, even though it may only serve as preparatory to excision.

A dilution of 1 part Methylene Blue to 10 parts distilled water is recommended by Prof. S. Parenski of Cracow, Austrian Galicia in the treatment of malaria by injections of 1 Cc. (16.2 minims) each day. (*L'Indépendance Méd.*, Vol. 15, page 112).

This agent is rapidly showing its efficiency in the treatment of cases of insanity and other mental disturbances, according to some observers. It is difficult at times however to trace its beneficial action and to explain how the results are produced from what is known of its action elsewhere. Dr. Pietro Bodoni of Genoa, Italy has obtained satisfactory results with this agent as a sedative in certain forms of excited mental conditions. He employed it in 14 cases which included mania, paranoia with some delirium, chronic alcoholism and hystero-epilepsy. He made use of it by injecting from 65 to 100 milligrammes (1 to 1½ grains) into the gluteal muscles and obtained marked sedative action within a few hours. This would last from one to four days and no disagreeable sequelae would follow. (*Klin.-Therap. Wochensch.*, Vol. VI, page 666).

Drs. Ch. Vallon and Wahl of Villejuif, France have made use of this agent in 250 milligramme (4 grains) doses in this class of cases. Their observations included six insane patients. In one the result was very satisfactory, in four no special results were obtained, and in another the delirium was rather increased by its use and the color of the urine passed led the patient to suppose that he had been poisoned, and gave him other ideas of being persecuted. These cases are too few in number for these observers to

conclude that Methylene Blue is not a hypnotic in the insomnia of insanity. (*Le Progrès Médical*, Vol. X, 3rd series, page 257).

Dr. Heinrich Rosin of Berlin, Germany has been experimenting "Upon a New Group of Anilin Colors, and their Significance in the Biochemistry of Cells, and their Availability for Tissue Coloring." He claims to have produced a new dye to which he has given the name of "Eosinate of Methylene Blue," formed by the combination of eosin and Methylene Blue in concentrated solution. He found that the tissues decomposed this compound in such a way that the nucleus of the cell was stained blue and the protoplasm red. His observations will be found interesting to those who are studying in this line. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 251).

Naphthalan, the proprietary article made by dissolving 2½ to 4 per cent. of anhydrous soap in purified petroleum naphtha, is still being pushed by its English manufacturers, and continues to be reported of value by many observers.

Its use has been almost entirely confined to the dermatologists.

Dr. Edmund Saalfeld of Berlin, Germany has reported 115 cases of eczema in all stages treated with this agent, and states that it rarely produced any irritation. (*Dermatol. Zeitschrift*, Vol. V, page 768).

Dr. Friedeberg of Magdeburg, Prussia has reported "On the Use of Naftalan." He finds that it is quite useless in the treatment of acne and articular rheumatism, and chiefly of value in eczema and similar conditions. (*Centralbl. für innere Medicin*, Vol. 20, page 801).

Other observers have made good use of it in burns of both the first and second degree, in venereal and phagedaenic sores, in ulcers of the leg and foot, in gonorrheal epididymitis, in impetigo contagiosa and the like.

Dr. Rohleder of Leipsic, Germany reports successful use

in a variety of cutaneous and venereal affections. He reports it as being an excellent application for all forms of eczema, except the most acute. Its most effective use is in the chronic and traumatic forms. He observes uniform improvement in psoriasis. He obtains good results in the treatment of all cases where ichthyol and sulphur have given satisfaction. It is quite useless in soft and hard chancres and in gonorrhea. He obtained favorable results from the introduction of rectal suppositories containing 5 to 10 per cent. of Naphthalan in the treatment of catarrhal prostatitis. (*Monatsh. für Prakt. Dermatol.*, Vol. XXVII, page 105).

Naphtalin (Naphthalene)—one of the hydrocarbons obtained from coal-tar—has received a little more attention during the past year than previously.

A Russian physician Dr. Achvlédiani has met with success in treating forty-three cases of chronic and acute eczema with an ointment composed of 1 part Naphtalin and 10 parts Lard. He, however, first dusts the surface of the skin, in the cases of acute and moist eczema, with a mixture of:

Salicylic Acid	0.15 gramme	(about 2½ grains)
Zinc Oxide	30.00 grammes	(463.0 ")
Talc	70.00 "	(" 2½ ounces)

He describes the particular way in which he applies the treatment, and states that although the pain and the pruritus disappear in about a week, applications of the ointment are continued but may be diminished gradually after three weeks. (*Bull. Gén. de Thérap.*, Vol. CXXXVII, page 351).

Other observers report upon its quite extensive use in the treatment of various sores and ulcers of the skin, especially chronic ulcers of the leg. After the first week there is a marked diminution in the discharge and the whole aspect of the ulcer is changed for the better.

Dr. Albert Woldert of Philadelphia, Pa. has reported his experience with "Naphthalin in Typhoid Fever" in which he describes it as being a valuable remedy in preventing intestinal putrefaction and tympanites. He relates in detail the clinical history of two cases in which he paid particular attention to the condition of the urine throughout the course of the disease for the purpose of ascertaining whether or not any irritation of the kidneys ensued. He concludes by stating that this agent does not cause any irritation. (*Journ. Amer. Med. Assoc.*, Vol. XXXII, page 809).

Dr. A. L. Benedict of Buffalo, N. Y. wrote to the Editor of the above Journal in regard to Dr. Woldert's article as being in line with his own hobby, and what he says will be of interest to those who are working in the same line. (*Journ. Amer. Med. Assoc.*, Vol. XXXII, page 928).

Dr. M. Zangerle of Marburg, Prussia reports a case of Naphthalin poisoning occurring in his Clinic after the administration of two 2 gramme (30.9 grains) Naphthalin tablets. He gives the history of the case in detail. (*Therap. Monats.*, Vol. XIII, page 122).

Naphthoxol (a mixture of a 2 per cent. alcoholic solution of Naphthol and a 3 per cent. Solution of Hydrogen Dioxide) has not been commented upon in the literature of the past year.

Nirvanin is one of the most recent substitutes for cocaine which has been offered. Chemical investigators have evidently been working over the problem of procuring a local anaesthetic which would combine the most useful properties of both orthoform and cocaine; one which would be more soluble than orthoform and less tóxic than cocaine. This present discovery is claimed to fill those requirements. Chemically it has the thrilling formula of Di-Ethyl-Glycocyl-Para-Amido-Ortho-Oxy-Benzoic Acid-Methyl-Ester-Hydrochloride, and well deserves a short name. It is prepared by various chemical manipulations to produce the

proper arrangement of the radical groups to obtain the effective results.

Dr. A. Einhorn of Munich, Bavaria and Dr. R. Heinz of Erlangen, Bavaria have produced this product after considerable investigation. They used the well-known chemical process of substitution. (*Muench. Med. Wochensch.*, Vol. 45, page 1553).

It crystallizes out from absolute alcohol in colorless prismatic crystals. It reacts with a violet color when ferric chloride is added. It is readily soluble in water, giving a neutral solution. Complete anaesthesia is obtained after a short time if a 5 per cent. solution is dropped into the eye. A temporary irritation occurs but shows no toxic effects. On a less sensitive portion of the mucous membrane the anaesthesia does not appear to be sufficiently complete to render an operation at that part entirely painless. Wherever the solution can be brought in contact with exposed nerve ends, as by subcutaneous injection, the anaesthesia appears to be complete and continues long enough to perform a minor operation. It appears to be decidedly antiseptic in its action, even in as weak a solution as 1 per cent.

Dr. F. Klaussner of Munich, Bavaria has applied it in the treatment of sores, fissures, wounds and burns of various kinds, and found it superior to orthoform. (*Muench. Med. Wochensch.*, Vol. 45, page 1338).

Dr. A. Joanin reported on this agent at the meeting of the Paris Therapeutical Society on June 14th last, and stated that it compared favorably with beta-eucaine, but rather preferred the latter for the reason that it was more soluble in water and was capable of sterilization. (*Bull. Gén. de Thérap.*, Vol., CXXXVII, page 906).

Dr. August Luxenburger, Assistant at the Polyclinic at Munich, Bavaria, has made quite an extended study of this new anaesthetic. (*Muench. Med. Wochensch.*, Vol. 46, pages 9 and 52). Those who desire to read a translation in English will find such made by Dr. J. W. Wainwright of New

York City, in the *Philadelphia Monthly Medical Journal* (Vol. I, page 410). Dr. Luxenburger concludes that in the concentration in which it was used in his experiments it is certainly non-poisonous, and that it is to be preferred to cocaine and its mixtures "as a remedy for the production of infiltration and regional anaesthesia." . . . "Up to date the surgeon was compelled in the use of infiltrations to use Schleich's solutions I and II, which soon become cloudy and flocculent, or a 1% cocaine solution which always has to be prepared fresh. It is less complicated to secure a 2% stable nirvanin-solution, which is equally well acceptable for both kinds of anaesthesia, after having been diluted with sterile common salt solution."

Nosophen (Tetra-Iodo-Phenol-Phthalein)—the Iodoform substitute—continues to be used by an increasing number of surgeons.

Dr. D. A. K. Steele of Chicago, Ills. reports his experience after one year's use of this comparatively new antiseptic, and states that he believes it "is deserving of a far more extended use than it has thus far received." He commends "its use by all surgeons who object to the indestructible and offensive odor of iodoform, or who fear its toxic qualities and desire a good substitute that is haemostatic, sedative and antiseptic." (*Chicago Clinic*, Vol. XXII, page 196).

Dr. Horace Tracey Hanks of New York City, in speaking of Eudoxin (the therapeutic form of Nosophen), repeats his favorable opinion regarding its efficiency in gynecological operations. His experience extends now over nearly four years and he believes Nosophen equal to iodoform. He favors a Nosophen gauze as an efficient dressing for abdominal wounds. (*Amer. Gyn. and Obstet. Journ.*, Vol. XIII, closing pages of the December number).

Dr. John S. Perekhan of Chicago, Ills. has published some "Clinical Notes on Nosophen, Antinosine and Nosophen-

Gauze," verifying the favorable experience of others. (*Chicago Med. Recorder*, Vol. XVI, page 22).

Dr. C. W. Kinney of New York City reports "A Case of Severe Ulcerative Keratitis Successfully Treated with Nosophen after Other Remedies had Failed." (*The Post Graduate*, Vol. XIII, page 944).

Orexin (Phenyl-Di-Hydro-Quin-Azoline—the appetite promoter and stomachic—is still before the profession both in its basic form and as a tannate.

Dr. Eugene S. Yonge of Manchester, England reports his satisfactory results in a large number of cases of anorexia. It proves to be especially effective in those cases where tonics and bitters have failed. (*The Therapist*, Vol. IX, page 120).

Some observers report excellent results in using it to relieve obstinate vomiting following chloroform narcosis, even in cases where other agents have been quite ineffective.

Dr. F. Hermanni of Biebrich, Prussia reports prompt relief in nine cases of vomiting of pregnancy under his observation. He gave 325 milligrammes (5 grains) after each meal. (*Therap. Monats.*, Vol. XIII, page 24).

An increasing number of observations have been made with Orexin Tannate during the past year, with excellent results.

Dr. F. Siegert of Strassburg, Germany very decidedly recommends the Tannate in anorexia in young children. He gives it in doses of 0.25 to 0.5 gramme (3.5 to 7.7 grains) from one to two hours before each meal, and extends the treatment for ten days if called for. He does not approve of the chocolate tablets now so attractively offered, but much prefers the powdered form. (*Muench. Med. Wochensch.*, Vol. 46, page 655).

Orthoform (Methyl Ester of π-Amido-*m*-Oxy-Benzoic Acid)—the synthetic local anaesthetic constituted like cocaine—continues to receive prominent attention throughout the medical world.

Dr. L. Teisseire has obtained excellent results when using this agent in the treatment of fissures of the nipple. It is applied either by insufflation or by a compress, care being taken to wash the nipples off well with boric acid solution before nursing. (*La Presse Médicale*, Vol. 6, second half, page 364).

Prof. Maygrier of Paris, France has obtained similar results in forty cases, with moderate relief. (*Med. Press and Circular*, Vol. LXVII, new series, page 84).

The laryngologists have made excellent use of it in ulcerative stomatitis, tuberculous ulceration of the mouth and certain affections of the nasal cavities. Insufflation appears to be the preferable mode of application, but an emulsion of 1 part Orthoform to 4 parts of Olive Oil has been found useful in particular cases.

Dr. Kindler, an assistant of Prof. Goldscheider in Berlin, Germany, has made good use of this agent in affections of the larynx, pharynx, oesophagus and stomach. (*Fortschr. der Medicin*, Vol. XVII, page 221).

Dr. Carl Kassel of Posen, Prussia has successfully used an emulsion of 1 part Orthoform to 4 parts Olive Oil as a laryngeal application. He has made use of this emulsion particularly in cases of tuberculosis. After the anaesthetic effect is accomplished, solid food can easily be swallowed and other remedies can be applied without discomfort to the patient. (*Therap. Monats.*, Vol. XII, page 556).

Dr. Friedr. Göppert of Breslau, Prussia reports on the use of Orthoform and Aneson in painful mouth affections of children. He recommends that they be applied by insufflation but regrets that their unpleasant taste is a disadvantage, particularly in children. (*Jahrbuch für Kinderheilk.*, Vol. XLIX, page 101).

Dr. Hildebrandt of Lüneburg, Prussia, has used a solution of Orthoform in warm alcohol to relieve the excruciating pain of an inflamed pulp in a carious tooth. It is intro-

duced on a plug of cotton. (*Deut. Med. Wochensch.*, Vol. XXIV, Therap. Beilage, page 95).

Dr. Dauchez recommends the following combinations for relieving the pain of an inflamed pulp:

Cocaine Hydrochlorate	0.10 grammes	(1.5 grains)	
Menthol	0.10 "	(1.5 "	)
Essence of Cloves	5.00 "	(77.2 "	)
Camphorated Alcohol	8.00 "	(123.5 "	)
Crystallized Carbolic Acid (liquefied)	1 drop.		

or 1 part each of Orthoform and Crystallized Carbolic Acid to 4 parts each of Camphor and Chloral.

In the discussion on this agent before the Paris Society of Dermatology and Syphilography in April last, Dr. Brocq reported on the "Dangers of Orthoform," stating that in the form of a solution it produced a redness and irritation of the skin accompanied with severe itching. In the form of an ointment he noticed that a very decided pruritic eruption occurs in from forty-eight hours to three days. Other disagreeable effects were noted, particularly when used for any length of time. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. IV, new series, page 380).

Dr. F. Miodowski has reported his second case of disagreeable results following the use of Orthoform, which was that of an elderly woman with a varicose ulcer of the leg. The 5 per cent. ointment used apparently relieved the pain but finally left a gangrenous spot in the middle of the ulcer which had to be treated antiseptically with lysol. (*Muench. Med. Wochensch.*, Vol. 46, page 382).

Dr. W. Asan of Murnau, Upper Bavaria, has reported his experience with this agent which has not been uniformly satisfactory in nine cases. It apparently first produced favorable effects which lasted from three to fourteen days when a peculiar necrotic process set in. (*Muench. Med. Wochensch.*, Vol. 46, page 252). These unfavorable affects

have been noted by several others, and should act as a warning to those who make use of this agent.

Dr. Eugene S. Yonge of Manchester, England, feels called upon this year "to draw attention to certain by-effects of a toxic character which this substance has been recently discovered to produce." His letter to the Editor of the *British Medical Journal* is as follows:

"Orthoform is rapidly displacing the older remedies as a local anæsthetic for ulcerated surfaces; but, inasmuch as the most salient clause in the credentials of the drug relates to its innocuousness, I feel bound, as one of its English sponsors, to draw attention to certain by-effects of a toxic character which this substance has been recently discovered to produce. In a paper lately published, Asam-of-Murnau remarks that orthoform when applied to ulcers sometimes produces sloughing similar to that caused by pure carbolic acid. He has encountered this untoward symptom in 9 cases out of a "large number," a statement which, for statistical purposes, is of course useless. By-effects of this character have also followed the application of the anæsthetic, in the practice of a medical friend of mine in two instances, after a few days' application of the hydrochloride of orthoform. As I have details of about 50 cases in which orthoform has been employed, I infer that the incidence of this complication may possibly be looked for in about 4 per cent. of all cases. The local necrosis appears to cease as soon as the drug is withheld. Further, Brocq and others have pointed out that orthoform may give rise to redness, irritation, and inflammation of the skin; and Epstein (Breslau) has observed vomiting, collapse, and other unfavourable signs after the administration of the drug by the mouth.

"With these premisses one naturally arrives at the conclusion that it is necessary to watch carefully the effects of this otherwise useful local anæsthetic, and to omit the

designation of non-toxicity from its attributes." (*Brit. Med. Journ.*, Vol. II for 1899, page 57).

Paraldehyde (officinal) has been more commented upon directly during the past year than in the year previous.

Dr. Emil Raimann of Vienna, Austria, had a rare opportunity to study the effects of a large dose taken by mistake. Two patients being treated in Dr. Wagner's Clinic were given 50 grammes each (almost 2 ounces), and recognizing the fact early, the effects and the mode of its elimination were carefully watched. A considerable amount was eliminated through the lungs and the skin, but a very small part through the kidneys. The sleep produced lasted in the one case fourteen hours and in the other nineteen, but no ill-effects followed. (*Wien. klin. Rundschau*, Vol. XIII, pages 305, 323, 341 and 355).

Dr. A. Sangregorio reports that the addition of Paraldehyde to caffein enhances the effect of the latter in the treatment of cardiac affections, nephritis and cirrhosis of the liver by causing the oedema to disappear much more rapidly than when caffein or other diuretics are given alone. Chloral also was found to have similar if not better effects than Paraldehyde when given with caffein. (*La Sem. Méd.*, Vol. 19, page 192).

Dr. Alexander Macgregor of London, England, has related his experience with this agent in the treatment of asthma, giving eleven of his cases. He remarks as follows:

"In the treatment of hospital out-patients suffering from asthma morphine hypodermically is out of the question and it is not usually advisable to prescribe chloral in such cases. Paraldehyde is absolutely safe. It not only relieves the spasm but it induces tranquil refreshing sleep without any objectionable after-effects. Besides, no evil results follow a prolonged use of paraldehyde; it does not give rise to a habit, and on this account it is a much more desirable drug than morphine or chloral." (London *Lancet*, Vol. I for 1899, page 363).

Dr. C. C. Hersman of Pittsburg, Pa., reports on three experiments he tried with this agent. (*Journ. Amer. Med. Assoc.*, Vol. XXXIII, page 638).

Dr. William Mackie of Elgin, N. B., reports his results with this agent as a respiratory sedative. He introduces the subject as follows:

"Since I first suggested the use of paraldehyde in spasmodic asthma, now over six years ago, I have had frequent occasion to administer the drug both in purely functional respiratory troubles and in dyspnœic conditions arising from various causes, in many cases even where complicated with grave organic lesions. In no case where I have used it have I ever had occasion for regret, but, on the other hand, have always been pleased, and often more than pleased, with the result. I am glad to find that Dr. Macgregor has found it equally satisfactory in the cases in which he has used it. I may say that the suggestion of its use in asthma has not been altogether a dead letter. Dr. Hearder, of West Riding Asylum, Wakefield, in 30 cases of asthma, many of which were complicated with severe organic disease, found that it came quite up to the level of expectation and I have on several occasions had private inquiries from medical men as to the propriety of prescribing it in particular cases. To those I have uniformly replied that paraldehyde is a safe drug and may be freely given under almost all circumstances. So assured of its value in dyspnoeic conditions generally have I become that I have long ceased to take notes of particular cases, but the two following, both of which were complicated with grave organic lesions, come fairly within the range of memory." He then relates the details of two cases. (London *Lancet*, Vol. I for 1899, page 756).

Its use in veterinary practice has also met with success.

Dr. Robt. S. MacKellar, a veterinary surgeon of New York City relates a few cases in which he employed it with success in preference to chloral hydrate, chloroform, ether

and other drugs. (*Amer. Vet. Review*, Vol. XXIII, page 107).

Peronin (Hydrochlorate of the Benzylic Ether of Morphine), proposed as a substitute for morphine, has not been commented upon during the past year.

Pharmacopœias and the question of their revisions are receiving much more attention than in previous years. Such a standard work in each country should be far more consulted than appears to be the case. If physicians particularly would study its pages more they would quite generally find preparations there offered which would most frequently meet their wants. Now that the United States Pharmacopoeia will soon be revised pertinent questions in the line of improvement are timely. The editorial advice given by the *Pennsylvania Medical Journal* (Vol. III, page 140) is well worth repeating here:

"In accordance with the call of President H. C. Wood, the National Convention for the Revision of the Pharmacopoeia of the United States of America, will be held in Washington, May 2, 1900.

At no time in the past has so much interest been shown in this work, as is the case now. The interest in this instance centers itself mainly on two points; one looking toward the general betterment of the Pharmacopoeia, in keeping with the lines heretofore adopted; the other, backed by commercial interests, having in view the inclusion of proprietary remedies in the official list.

Coming under the first head, may be mentioned the standardization of a number of official preparations made from drugs having definite active principles susceptible of isolation. The first attempt in this line was made in 1880, when preparations of opium were made to conform indefinitely to certain requirements in strength of alkaloids. In 1890 these requirements were made more definite, and the cinchona barks and nux vomica were included in the same list. This line of progress should, and doubtless will, be

continued in the coming revision, including such drugs as belladonna, hyoscyamus, conium, stramonium and many others of like nature. Some drugs, owing to the complex nature of their active ingredients, are practically insusceptible of standardization. Among these may be mentioned digitalis, aconite, veratrum viride and ergot, all important drugs, but all depending for their medical activity upon more than one ingredient, and these present in extremely small amounts.

For some of these a physiological assay has been advised, though whether this is practical in all cases, it is difficult to determine. Recommendations have been made from various sources, that many of the present official drugs, such as herbs, flowers, etc., would be dropped from the list. We believe such action would be unwise, for, although some of this class of drugs are not often prescribed by physicians, many of them are in common use as home remedies, and to retain them in the Pharmacopoeia will mean that they must conform to a standard in purity, and that penalties for their adulteration may be enforced. Many of these household remedies are of distinct value, and if more frequently recommended by physicians would do much toward discouraging the use of nostrums and proprietary remedies.

A strong attempt will doubtless be made to have included a number of proprietary articles, but we fail to see how this can logically be done. The object of the Pharmacopoeia is to furnish a list of drugs whose purity may be guaranteed by appropriate tests and requirements, and whose manufacture necessarily must be free. What, we ask, would be the sense of making antipyrin official, since its manufacture, and everything else pertaining to it, would not be under pharmacopoeial control? The code of ethics is distinctly opposed to proprietaryship in medicines, and that also should have appropriate weight. To exclude these synthetic proprietary remedies from the Pharmacopoeia, does not mean that they shall not be used, by whomsoever thinks

proper, but to include them would be to clothe them with ethical dignity, to which they are not entitled, and which would lower the tone and value of the Pharmacopoeia."

The report of the Committee on Pharmacy of the Pennsylvania State Medical Society is also well worth repeating here:

"Believing there is great need for fuller co-operation between the pharmacist and the regular physician, your committee deems it fitting to endorse the statements of former reports in regard to prescribing the legitimate remedies of the Pharmacopoeia and National Formulary. We desire to call attention to some progress in the right direction, as shown by the fact that pharmacists in a few places in our cities are making it known that their shops are conducted more for compounding authorized remedies than for the sale of proprietary and patent medicines. This feeble move is along the right direction toward educating the gullible public, not only to have a wholesome respect for rational treatment, but also to recognize economy and justice. The accusation that the profession is largely to blame for the sale and use of proprietary remedies is substantiated by the statements and statistics gathered from large wholesale drug houses and recently published by Prof. H. C. Wood, to the effect that at least ten per cent. of the whole patent medicine and proprietary trade is carried on through the physicians. This factor certainly should be eliminated. How much more satisfactory to the physician would our management of disease be, as well as more profitable to the skilled pharmacist, if this blot on our profession could be removed. We also believe that the true pharmacist agrees with us in this opinion. Through a leading druggist in one of our large cities, we learn that while there is a great demand for many proprietary remedies by the profession, the prescriptions of the most successful practitioners largely call for the true and tried remedies. The statement is encouraging, and your committee feels that if the standard

drugs were more widely used there would be less "counter prescribing," and more satisfaction and justice for all concerned.

The number of recent deaths from so-called "headache powders," promiscuously sold, has been startling. We believe that the pharmacist as well as the physician is anxious to restrict the sale of these articles, and any effort on his part to have these powders properly marked, either by the formula or by a caution-label, through legal measures, should have our encouragement; while we, as physicians, should go further and thoroughly discourage and protest against their use." (*Penn. Med. Journ.*, Vol. III, page 46).

Dr. H. C. Wood of Philadelphia, Pa. spoke very strongly on the subject of Nostrums at the centennial meeting of the Medical and Chirurgical Faculty of Maryland, and said:

"That all physicians have to do is to make it a governing principle that the only patented or proprietary drugs they will use shall be simple organic principles. The golden rule of living should be: give no certificates; use no proprietary combinations of medicines. In reference to the laws protecting two classes of new remedies, he believes there should be a difference. No vegetable or mineral substance which exists preformed in nature should be capable of being patented. It can in no sense be called an invention; the discovery of its medicinal value is almost always largely the result of chance, rarely of foresight. A process for the extracting from the drug of its active principle might, however, be patented, so that process-patents might be allowed for medicines of this class. On the other hand, when by synthetic method a substance which is not found freely existing in nature has been made by a chemist, such substance may well be said to be an invention of the chemist, and to be, therefore, capable of patenting." (*Phila. Med. Journ.*, Vol. 4, page 465). The original article of which this is an abstract occurs in the *Maryland Med. Journ.* (Vol. XLII, page 31).

The new British Pharmacopoeia has now been out long enough to be thoroughly commented upon, and from some quarters emphatically criticised. The compilation of the proposed Indian and Colonial Addenda is still going on and seems difficult of accomplishment for so many interests have to be satisfied. The correspondence and suggestions made from so many quarters are so voluminous that the task is a very difficult one. The simple question of the prominent consideration of tropical diseases adds largely to the amount of material which must be digested by the Committee. Those nations who have colonies are called upon naturally to consider such a question in a very detailed way. How to deal with such a dependency as the Dominion of Canada is quite difficult. The official British standard of strength, quality and purity must surely be enforced, but they cannot refrain from recognizing the French Codex and the United States Pharmacopoeia for very evident reasons. Therefore in laying down their general laws all drugs and preparations are to be deemed adulterated if their strength, quality and purity fall below the standards under which they are authorized.

Recently the Belgium Royal Academy of Medicine requested its Government to open negotiations with foreign Governments with a view to drawing up an International Pharmacopoeia. This subject is not a new one, and heretofore every time it has been brought up with any prominence it seems to have been finally set aside as being a somewhat impracticable scheme. However it would seem that some degree of uniformity might be established in relation to the more potent drugs and preparations throughout the world, leaving those which have only a local interest to vary in accordance with the requirements of the locality.

The Committee for the revision of the German Pharmacopoeia have about completed their work, and now it simply needs official recognition by the Bundesrath before

promulgation, thus there may be some delay before such is obtained.

Although it is now over a year since a Commission for the revision of the Swiss Pharmacopoeia was appointed, it was not able to begin until a few months ago, for the reason that no financial support was given it.

A new edition of the Italian Pharmacopoeia should have been presented by this time had promises been fulfilled.

The Spanish Royal Academy of Medicine recently appointed a Committee of five medical practitioners to prepare a new edition of the Spanish Pharmacopoeia—the last edition was revised in 1884.

The new edition of the Argentine Republic Codex is now published. The chief feature appears to be the fulness of its descriptions, especially in relation to microscopic structure.

A new edition of the Roumanian Pharmacopoeia is rapidly approaching completion.

Phenacetin (Para-Acet-Phenetidin) has lost none of its prominence as an antipyretic and analgesic throughout the past year, and calls for little comment here. It may be of interest, however, to record here that a new antipyretic has been suggested having the same physiological and therapeutic action as Phenacetin and which differs only slightly quantitatively. It is known chemically as Di-Acet-Phenetidin, being a so-called Acetylised Phenacetin. It is stated however that it is not likely to be used in medicine to any extent, for the reason that it is quite unstable and decomposes readily when exposed to atmospheric moisture, yielding acetic acid.

Phenalgin is a new coal-tar derivative offered as an antipyretic and analgesic. Chemically it is Ammonium Phenyl-Acetamide. It is offered in the form of a fine colorless powder with only a slight taste and pungent odor. It is insoluble in water. It is recommended for the relief of the pain in neuralgia and rheumatism, in doses of from 400 to

750 milligrammes (6½ to 11½ grains). It is claimed to have hypnotic and anodyne properties and acts efficiently as a substitute for opium. The above reports come from abroad.

The most prominent observer in this country has been Dr. J. A. Hofheimer of New York City. He obtained excellent results both when used alone and in combinations, in eighteen cases. In reporting upon his observations, he concludes as follows:

"In summing up my experience with phenalgin, it was found useful in all cases where *pain* was a prominent symptom, acting especially well in rheumatic and neurotic cases. Also, like most of the drugs of its class, it has antipyretic powers; and in malaria, used alone or combined with *small* doses of quinine, it aborts or shortens the paroxysm. It has hypnotic as well as anodyne properties, and is of great service in cases where opiates are often indicated, especially as it leaves no bad after effects and engenders no habit." (*N. Y. Med. Journ.*, Vol. LXVIII, page 914).

Phenocoll (Amido-Para-Acet-Phenetidin)—the antipyretic —used now practically always in the form of Hydrochlorate has quite established itself with the medical profession. This being the case it appears to call for little comment in the current literature.

Dr. Giovanni Villani reports excellent results with it in the treatment of influenza, having employed it in some 400 cases during an epidemic of "grippe." He claims it to be quite a specific.

His dose for an adult is 3 grammes (46.3 grains) daily; for children 1 gramme (15.4 grains) a day. He met with such uniform success that it would seem as if it might almost rightly be called a specific. (*Gaz. Med. Lombarda*, Vol. LVII, page 482).

Dr. Salvatore Satullo reports upon his successful use of it in the treatment of malaria and rheumatism. He claims it to be an efficient substitute for quinine, particularly in cases of idiosyncrasy or with gastric disturbances. In

cases where quinine is contraindicated, as in pregnancy, it was most valuable. He recommends a dose varying from 1 to 2 grammes (15.4 to 30.9 grains) given just before the febrile attack. He has met with equal success in cases of rheumatism whether they be the acute or chronic form. (*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 132).

Phenosol is a new synthetic antipyretic compound containing 57 per cent. of Phenacetin and 43 per cent. of Salicylic Acid. Chemically it is Salicyl-Acetic Acid-Para-Phenetidin. It is offered in the form of colorless, needle-like crystals, very sparingly soluble in water, alcohol or ether. It splits up readily into its constituent parts. The dose varies from 500 to 600 milligrammes (7.7 to about 9.5 grains daily). It is recommended specially in the treatment of acute rheumatic affections on account of being prompter in action than salicylic acid or the salicylates. Few clinical reports are yet published.

Dr. Burghart of Berlin, Germany, Assistant in Dr. von Leyden's Clinic, has been practically the only observer to report. He speaks of the two allied compounds Pyrosal and Phenosol as having been used for nearly a year in the Clinic. He gives the history of 25 cases. (*Deut. Med. Wochensch.*, Vol. XXIV, page 645).

Phesin, the derivative of Phenacetin has not received much attention. On account of the one report made this year, however, it may be of interest to recall its history. The radical SO_3 is introduced into the composition of Phenacetin for the purpose of rendering it less toxic, and the short name of Phesin is applied to the product. Two observers, Drs. Zoltán von Vámossy and Béla Fenyvessy of Buda-Pesth, Hungary, had experimented with this derivative as well as with another agent "Cosaprin" which is a derivative of acetanilid (brought out at the same time), by the introduction of the same radical group SO_3. These observers found that whereas a healthy rabbit is killed by 1 gramme (15.4 grains) of Phenacetin, no ill-effects were ob-

served when 3 grammes (46.3 grains) of Phesin were given. This agent Phesin is offered in the form of a fine brown odorless powder with a slight caustic taste, freely soluble in water and with a slight acid reaction.

Dr. Richard Rosen of Berlin, Germany, is apparently the only observer reporting this year. He has made use of both Phesin and Cosaprin in 50 carefully observed clinical cases. (*Therap. Monats.*, Vol. XIII, page 156). A similar allusion is made to the above in these Comments under the head of Acetanilid.

Piperazin (Di-Ethylene-Di-Amine) has received as little comment in the past year as in the previous one.

The only prominent mention is made by Dr. Carlo Gioffredi of Naples, Italy. His results were very gratifying after a prolonged administration of this agent in the case of a man suffering from gout, having a gouty concretion located in the tendon sheath of the peroneus longus muscle. The relief came only at first to the general symptoms and not to the gouty concretion, but a diminution in the size of the concretion was noted the second day after an injection directly into the sheath of 50 milligrammes (4-5 of a grain) in ½ Cc. (about 8 minims) of water. This was immediately followed by a severe burning pain which had to be relieved by the application of ice. The diminution in the size of the concretion was evident, although slight, on the second day, and the whole disappeared after ten injections. The local burning pain was relieved by spraying the skin with ether. Dr. Gioffredi recommends in future the careful injection of an even weaker solution of Piperazin within the joint. (*Gaz. degli Osped. e delle Cliniche*, Vol. XX, page 1055).

Protargol (the silver compound consisting of 8.3 per cent. of Silver combined with Protein) has received fully as much attention during the past year as in the year previous.

Dr. Morotti of Milan, Italy, reports favorably on its use in the treatment of gonorrhea in all stages. He varies the strength of his solutions from ½ per cent. to 2 per cent. as he

progresses. He much prefers it to potassium permanganate. He also used it successfully in the vulvo-vaginitis of children. (*Gaz. Medica Lombarda*, Vol. LVIII, page 311).

Several other observers report favorably upon its use in gonorrhea.

Dr. Georg Berg of Frankfort-on-the-Main, Prussia gives his adverse opinion of it from his experience with ten cases of gonorrhea in which he used from ½ to 5 per cent. solutions. He reports that no benefit resulted although no harm was done. (*Therap. Monats.*, Vol. XIII, page 259).

Dr. Jänner of Vienna, Austria reports on its use in some forty cases in the Ophthalmic Clinic of Prof. Von Reuss. The most marked beneficial results occurred in blennorrhea of the tear duct and sac, and where concentrated solutions were used cocaine was not required for local anaesthetic purposes. It was used in chronic cases and in ophthalmia neonatorum. He observed that it was of little use in catarrhal conjunctivitis and trachoma. (*Die Heilkunde*, Vol. III, page 82).

Dr. Geo. H. Stubbs of Birmingham, Alabama reports on his successful use in the treatment of affections of the lachrymal duct and sac. He has made frequent use of solutions varying from 1 to 3 per cent. in chronic conjunctival catarrh. He repeats its advantages over silver nitrate in that its solutions keep well, are not affected by heat and are not irritating to the mucous membrane. (*The Alabama Med. and Surg. Age*, Vol. 11, page 432).

Dr. Edward S. Peck of New York City read a paper before the Section on Pediatrics of the New York Academy of Medicine on December 8th last entitled "Protargol and Argonin in the Treatment of Purulent Ophthalmia in Infants," relating some seven cases in which he showed the advantages to be derived from the use of Protargol in the treatment of gonorrheal ophthalmia. "The results obtained show that the duration of the disease has been shortened, that gonococci have disappeared at an earlier

date than usual, and that the sight of the affected eye has, to say the least, not suffered more than when other methods of treatment have been employed. In the earliest cases the protargol powder was dusted into the eye three times each day and allowed to remain fifteen minutes. This was soon changed to twice each day, but as the inflammatory reaction was marked and the patients complained of severe pain, a fifty-per-cent. solution was substituted, being applied twice or thrice each day and allowed to remain in the eye three minutes. Later, a five-per cent. solution was used and allowed to remain in the eye fifteen minutes. This last solution has proved to be the most satisfactory." (*Med. News*, Vol. LXXIV, page 68).

Dr. Fritz Engelmann of Bonn, Rhenish Prussia reports on the use of this agent in place of silver nitrate, in Credé's treatment. His cases amounted to 100 in all and he used a 20 per cent. solution which proved to be far less irritating and a more beneficial bactericide than the old silver salt. (*Centralbl. für Gyn.*, Vol. 23, page 905).

Dr. Arthur Alexander of Berlin, Germany made a report on "Protargol in Rhino-Laryngological Practice." After prolonged treatment he met with success in cases of chronic pharyngitis and atrophic rhinitis. His most satisfactory results were obtained from the use of a 5 per cent. solution in the treatment of empyema of the antrum. In cases of asthma he painted the nasal mucous membrane with a ½ per cent. solution and obtained good results. Little benefit was obtained in acute cases of tonsillitis, pharyngitis and laryngitis. (*Archiv. für Laryngol. und Rhinol.*, Vol. IX, page 113).

Pyoktanin (Methyl-Violet)—the analin dye "pus destroyer"—has received little direct attention in the current medical literature of the year, but it continues to be a prominent agent. It may be interesting to just note here the following antiseptic suppository which has been recommended:

Pyoktanin .....0.06 gramme ($\frac{15}{16}$ grain)
Extract of Belladonna .....0.02 " ($\frac{5}{16}$ ")
Cacao Butter .....2.00 grammes (30.9 grains)
(*La Riforma Medica*, Vol. XV, page 324).

Pyramidon (Di-Methyl-Amido-Antipyrin) has apparently not attracted the profession as a substitute for antipyrin for which much was claimed, as practically nothing has been reported upon it during the past year.

Pyrantin—the antipyretic compound discovered a year ago, obtained by the action of anhydrous succinic acid on para-phenetidin—appears in the form of small, bright prismatic crystals which are only sparingly soluble in water and ether, but readily soluble in alcohol and acetic acid. Combined with sodium hydrate to form the salt it is rendered quite soluble and is now known under the name of "soluble pyrantin." Its physiological properties have been carefully studied by Dr. Carl Gioffredi of Naples, Italy who has published his results entitled "Pyrantin (Para-Eth-Oxy-Phenyl-Succinimid)." His experiments were carried on with animals to which he gave at times large doses. (*Deut. Archiv. für klin. Medicin*, Vol. 60, page 559).

Prof. A. Piutti of Naples, Italy has also given a description of this new antipyretic but adds little that is new to what Dr. Gioffredi has obtained by direct investigation. (*Therap. Monats.*, Vol. XII, page 560).

Clinical reports have not yet been made upon this agent.

Pyrogallol (Pyrogallic Acid) has received little attention throughout the past year. It however may be of interest to note that Dr. Paul Grüneberg of Halle, Prussian Saxony has made some exhaustive comparative experiments with Pyrogallol Tri-Acetate (known by the name of Lenigallol), Pyrogallol Mono-Acetate (known by the name of Eugallol), and Pyrogallol Di-Salicylate (known by the name of Salligallol)—all used in dermatological practice. (*Dermat. Zeitschrift.* Vol. VI, page 1).

Pyrosal, a new synthetic antipyretic compound containing 50 per cent. of Antipyrin, 36 per cent. Salicylic Acid and 14 per cent. Acetic Acid. Chemically it is Salicyl-Acetic Acid-Antipyrin. It dissolves sparingly in water, alcohol and ether, and readily splits up in the presence of acids. It has been studied in conjunction with Phenosol, and all the observations made upon it have been accomplished by practically the same observer, Dr. Burghart of Dr. von Leyden's Clinic. It is recommended in cases of acute rheumatism, and is found to be prompter in action than salicylic acid and the salicylates. (*Deut. Med. Wochensch.*, Vol. XXIV, page 645).

Resorcin (officinal) has lost none of its prominence during the past year. In some quarters it has been used in a little different line than heretofore.

Dr. A. G. Silbermintz of Poltava, Russia has made use of it in the treatment of vegetations occurring about the genital organs. A paste made by mixing this agent with water has been used as a local application, to be covered with a gauze compress, and this treatment repeated until the vegetations dried up and fell off. In other cases it was incorporated with flexible collodion in the proportion of one part to four. Care is necessary to clean the parts with boric acid solution before application. (*Rev. Pratique. d'Obstét. et de Gyn.*, Vol. 14, page 303).

Others have used it in the treatment of different manifestations of eczema in the form of a 25 per cent. solution on absorbent cotton.

It has been recommended in counteracting the toxic effects of cocaine by using the following combination: Resorcin 1 part, Cocaine Hydrochlorate 2 parts, Distilled Water 10 parts. Such a solution apparently enhances the anaesthetic action and the cocaine remains in solution.

Dr. L. E. Blair of Albany, N. Y. reports upon his experiments with various mixtures of Resorcin and Benzoinol in

affections of the nose and throat. He has adopted the following formula as being the most satisfactory mixture:

Resorcin	5.000	grammes	(about	80	grains)
Eucalyptol	0.650	"	("	10	")
Menthol	1.300	"	("	20	")
Benzoinol	113.400	"	("	4	ounces)

The advantages of this mixture, he states, are that it is markedly anaesthetic and analgesic, antiseptic, astringent, non-poisonous, non-irritating and healing. He also remarks that it lacks the suggestiveness of the drug store, the almost characteristic odor of which iodine, iodoform and carbolic acid generally furnish. (*Albany Med. Annals*, Vol. XX, page 422).

Dr. Schwabe of Langensalza, Prussian Saxony has reported a case of Resorcin poisoning in which a solution was swallowed containing in amount about 1 gramme (15.4 grains) of Resorcin. The patient became unconscious. After a stimulant treatment had been carried out convalescence resulted, but it impressed those who witnessed the case with the importance of the care necessary to be taken. (*Der Kinderarzt*, Vol. X, page 103).

A Mono-Acetate of Resorcin under the name of "Euresol" has been offered as a useful application to those parts of the skin covered with hair. It is a thick oily product with an agreeable odor. Its efficiency is claimed to be increased by dissolving in acetone. A Tri-Bromo-Resorcin has been recommended as an effective antiseptic and bactericide with very slight toxic properties. Little however has been reported upon it.

Retinol (Resinol) has not been referred to here for some years past. This product is obtained by the distillation of Burgundy pitch. Under the head of Resinol, it is manufactured by a well-known firm in this country, and appears to still act as a useful solvent for many medicinal agents.

Dr. B. F. Ray now claims to have produced a product by the following formula which will accomplish anything that the product of the market does:

Sublimed Sulphur	2	grammes	(about 30 grains)
Acetanilid	2	"	(" 30 ")
Bismuth Oxide	2	"	(" 30 ")
Lead Acetate	2	"	(" 30 ")
Liquid Tar	2.2	Cc.	(36 minims)
White Petrolatum	23	grammes	(" 6 drachms)

Carmine for coloring purposes, a sufficient quantity. (*Journ. Amer. Med. Assoc.*, Vol. XXXIII, page 424).

Roentgen Rays (X-Rays) have received a large amount of attention during the past year owing to the various ramifications into which the subject may now be divided. Beside the term radiography which has been given to this department of scientific investigation, the English at times use the word skiagraphy and the Germans aktinography.

Improvement in the technique of the investigations in this line are constantly being made. There has recently been devised a new "break" for the induction coil which has been installed in the X-Ray Department of the Charing Cross Hospital, under the direction of Dr. Mackenzie Davidson. It is described as follows:

"The effect as we observed it in screen work was exceedingly good, the light being steady and the definition very fine. The new device has been introduced by Dr. Wehnelt, of Charlottenburg. It has been known for a long time that a strong current passed through an electrolyte will become intermittent or interrupted, and produce a note—sometimes a shrill one. It occurred to Dr. Wehnelt to use this as an "electrolytic break" for the induction coil. The apparatus consists of a cell filled with sulphuric acid and water, the specific gravity of the mixture being about 1205. A sheet of platinum foil (such as is used in a Groves cell) is the cathode or negative plate in the cell. The anode or

positive consists of a small platinum wire fused into the end of a closed glass tube, and contact inside the tube is made by a little mercury and a copper wire dipping into it. This is immersed in the fluid. This cell is interposed between a 100-volt current and the primary terminals of an induction coil. When the current is turned on violent electrolysis takes place, a more or less shrill note is produced according to the size of the platinum point, and a thick ribbon-like discharge is produced at the secondary terminals. The method promises to be very useful. The Crookes tube is brilliantly and steadily illuminated and the fluorescent screen gives such an effect as is seen when a large Wimshurst machine excites the tube, but it is more brilliant, and photographic exposures are greatly shortened; the difficulty will be to get tubes to stand the current, and already the anodes of several tubes have been melted. Osmium is not disintegrated, but soon becomes white hot, and the vacuum alters rapidly under the intense bombardment. The primary of the coil used at Charing Cross Hospital took from 3 to 10 amperes, according to the size of the platinum wire used in the cell. No "hammer" or condenser is required, and a point of importance seems to be that this "electrolytic break" is very sensitive to any change of resistance in the secondary discharge, and reacts accordingly without the sudden jerks usual with the "hammer break." (*Brit. Med. Journ.*, Vol. I for 1899, page 551).

Dr. J. Macintyre of Glasgow, Scotland feels called upon to make some reply and suggestions to the above note on the improvement in technique which it will be of interest for those to read who desire to follow up this subject. (*Brit. Med. Journ.*, Vol. I for 1899, page 701).

Dr. J. S. Wight, Jr., of Brooklyn, N. Y. offers "Some new Suggestions in X-Ray Photography" and gives a picture of the results of his observations in the use of a sheet of very sensitive bromide paper, in the four cuts he presents. (*Phila. Med. Journ.*, Vol. 3, page 104).

Dr. B. Wiesner of Aschaffenburg, Bavaria offers a new Roentgen instrument for practicing physicians. He reduces the cost one-sixth by the introduction of a newly invented interrupter, and thus brings the price of the whole apparatus down to a more reasonable figure. (*Muench. Med. Wochensch.*, Vol. 46, page 382).

The experience of all observers in the use of these Rays in surgical work is increasing rapidly. Repeated opportunities are taken to locate bullets, needles, pieces of glass, a certain class of calculi and other bodies, so that much definite knowledge is being gained. As to clearing up the mooted points concerning fractures and dislocations and even as to the diseases of bones and joints, many valuable results have been obtained. An atlas has already been published containing a series of eighty illustrations of various fractures and dislocations depicted by this means which are very creditable. Surgeons will have to be very careful to express themselves conservatively as to their deductions, for it has been definitely shown that at times the picture as developed is misleading.

Dr. Francis H. Williams of Boston, Mass. has been one of the most energetic investigators and writers on the use of these Rays. He read a paper before the Section on Practice of Medicine at the last meeting of the American Medical Association held at Columbus, Ohio, on "Some of the Ways in which X-Rays Assist in Medical Diagnosis." His very interesting description of the static machines and coils which he has used to excite the vacuum tubes at the Boston City Hospital has probably brought the subject quite up to date as far as apparatus is concerned. He alluded to the prominent useful applications of these Rays, and concluded as follows:

"Since 1896 I have urged the more general use of X-ray examinations for infants and children, and I desire to take this opportunity to direct attention to the readiness with which these examinations may be made in young patients.

Not only the thorax, but the head and the various organs in the abdomen may be more easily examined than in adults. It is not necessary to excite the child by removing the clothing. Infants may be examined with the screen, or X-ray photographs may be taken while they are asleep." (*Journ. Amer. Med. Assoc.*, Vol. XXXIII, page 1207).

The progress made in the application of stereoscopy under the title of "Radiostereoscopy" has been very marked during the past year. That the fluorescent screen has been much perfected has been very gratifying to the medical practitioner, for it has enabled him to localize such interior troubles as aneurism of the thoracic aorta and abscesses, and has even given him the ability to diagnose some pathological conditions of the heart and lungs. All these points have been very prominently brought out by Dr. Mansell Moullin of London, England in his Presidential Address on "The Application of the Roentgen Rays to Medicine and Surgery," delivered before the Roentgen Society on July 4th last. (London *Lancet*, Vol. II for 1899, page 474).

Dr. Francis H. Williams of Boston, Mass. again contributes something to this subject in the way of describing "A Simple Method of Locating some Foreign Bodies by Means of the Fluorescent Screen." He says he has used this method for locating bullets in different parts of the extremities as well as in the neck, thorax, back and abdomen, usually readily determining their situation. (*Boston Med. and Surg. Journ.*, Vol. CXL, page 304).

Dr. Schuster of the Nauheim Baths, Hessian Germany has probably been one of the most extensive investigators in the use of these Rays in the diagnosis of diseases of the heart and aorta. His observations are extremely interesting. He states that various inferences may be drawn from the character of the shadow produced by the heart, also the relation between the latter and shadows due to such other parts as the vertebral column, the sternum, the diaphragm and the ribs. He finds, for instance, that he can demon-

strate that the heart does not rest on the diaphragm but is exclusively supported by the large blood vessels of the thorax. Under normal conditions a free space exists between the heart and the diaphragm during inspiration. When the heart enlarges the interspace is quite obliterated. Again adhesions will prevent the heart moving independently of the diaphragm. The persistence of the ductus arteriosus can even be detected at times. The initial stages of an aneurismal dilatation of the aorta has been detected by these Rays. (*Therap. Monats.*, Vol. XIII, page 421).

Dr. Aug. Hoffmann of Düsseldorf, Rhenish Prussia states that little attention has been given to the observations of the heart movement by means of these Rays, and alludes to the specially interesting observation of the irregular cardiac action brought out by X-Ray pictures, for he has repeatedly seen the different cardiac contractions take place and has had opportunity to see the arhythmia in a well-marked Roentgen picture. He relates one case in which the apex beat of the heart could not be seen or felt by the ordinary means, and yet by means of these Rays a very weak contraction was readily recognized, for the movements of the left lower border of the heart could be easily seen. He took pains to take sphygmographic tracings of the pulse at this time and it gave no indication of this condition. He points out the fact that such a case might very easily have been diagnosed as bradycardia. (*Deut. Med. Wochensch.*, Vol. XXV, page 243).

"The Relation of the Trachea and Bronchi to the Thoracic Walls, as Determined by the Roentgen Rays" has been studied by Dr. Joseph A. Blake of New York. He gives some excellent skiagraphical diagrams of his work. (*Amer. Journ. Med. Sciences*, Vol. CXVII, page 313).

Dr. Albert of Dresden, Germany has made quite a study of the diagnostic value of these Rays in pelvic deformities. He described his method of obtaining tracings of the brim of the pelvis and the position of the child, before the Dres-

den Gynecological Society at its meeting on December 15th last. Very gratifying results were obtained when examining the superior plane of the pelvis as well as in diagnosticating flattened pelvis. He pointed out the difficulty he met with in the confusion of the shadows obtained by the promontory of the sacrum and the symphysis. He exhibited photographs of a fifth, sixth, eighth and tenth month's foetus. (*Centralbl. für Gyn.*, Vol. 23, page 418).

Drs. Redard and Laran of Paris, France presented to the French Congress of Surgery held in Paris in October 1898, a paper "On the Importance of the Radiograph for the Diagnosis and Treatment of the Deviations of the Vertebral Column" They were not only able to study very distinctly the shape of each vertebrae but even their internal structure and other points of value. (*Revue de Chirurg.*, Vol. XVIII, page 1103).

Some of the ill-effects of the Roentgen Rays are demonstrated in a case reported by Dr. Daisy M. Orleman of Peekskill, N. Y. (N. Y. *Med. Record*, Vol. 56, page 8).

Dr. Howard J. Williams of Macon, Ga. rather discourages the use of these Rays in medico-legal practice. He publishes a "Report of a Case of Cervical Rib, with Remarks on Mistaken Skiagraphical Diagnoses", and Dr. Samuel Lloyd of New York comments on the above report by publishing a note, in which he states that the use of the X-Rays in these cases "is likely to do much harm." (*Annals of Surgery*, Vol. XXVIII, pages 509 and 514).

Mr. Edmund Owen, Surgeon to St. Mary's Hospital, London, England has contributed an article on "Fractures—In the New Light."

"It is scarcely necessary to say that the "new light" to which I refer at the head of this article is that emanating from a Crookes's vacuum tube. We have known of its mysterious power only for a few years, and yet, after the manner of old-fashioned light, it has spread rapidly everywhere, and it is constantly illuminating dark places. The public

know all about it, and are taking more than a semi-intelligent interest in it. The man in the street looks admiringly at pictures produced by it which are exhibited in the windows of the surgical instrument-makers, and, paying his fee, he has a perfect right to go in and have a damaged limb "X-rayed" if he so chooses.

This very day I have seen an X-ray picture of the tibia and fibula which a lady had badly fractured about eighteen months ago. The lady went into the shop and paid her fees for two pictures; but the antero-posterior view revealed so much overlapping that the kind-hearted radiographer did not like to send it home. But as the side-view did not show much amiss he forwarded it. Back went the lady, saying that she had paid for two views, and that only one had been sent, and she insisted on having the other view. The radiographer, in a praiseworthy desire to prevent unpleasantness, excused himself and prevaricated (the lady told me that he was "almost rude"), but there was nothing for it but to send his work home. As soon as it arrived the lady was alarmed at it; the bones were overlapping in an unmistakable manner—anyone could understand it at a glance. I had had no concern in the early treatment of the case (which had been one of severe compound fracture), but the lady asked me to come round and advise. I explained that the overlapping of the fibula and its cross-union with the displaced tibia had rendered the mend extremely solid and strong, and that she had every reason to be satisfied with the result of the treatment, for I had been given to understand by the surgeons who had treated her that they were for some time doubtful if the limb would not have to be amputated.

Inconvenient illuminations of badly set fractures and of other cases in which, to put it mildly, Nature has not been enabled to triumph over osseous lesions are becoming, I should think, of almost daily occurrence, and the sooner every surgeon realizes this the better for his future peace

of mind. We may make a mistake about the diagnosis of a soft swelling or a stricture and it may not greatly matter, as the question will probably right itself in due course, but if we come to grief over a broken or displaced bone or epiphysis, it may be too late to remedy the mistake when the discovery is made. Possibly it is some lay friend of the patient, or it may be some other medical man, who takes the case to the radiographer, but the exact condition is at last manifested and our mistake is nailed upon the barn-door."

Other cases are mentioned after which Mr. Owen finally concludes:

"Lastly, in connection with the mistakes, failures, or imperfect results turned out by brother practitioners, it is our duty to be extremely charitable, and never to pass a hasty adverse judgment upon their handiwork; for it is just possible that when the case was first seen it was surrounded with difficulties of which at that time we can know nothing, and that the care and skill bestowed on it were worthy of a better issue. To judge merely by a result may be equally unfair and uncharitable." (London *Practitioner*, Vol. LXII, page 535).

Dr. H. Lyman Sayen of Fort McPherson, Ga. has written an article on "X-Rays in the Army" in which he concludes:

"It certainly seems that the recent developments in the design of X-ray apparatus have advanced it to such a state that there are great possibilities for the adaptation of it to work in the field. A covered wagon, drawn by two mules, would furnish the dark room, as well as the means of conveyance. It would have to be in charge of two men, who should be so trained in the work that they could, between them, take care of everything, from the secondary of the induction-coil to the hoofs of the mules. In the wagon might be placed a 12-inch induction-coil, so made that every part could be immediately removed and replaced by a duplicate, of which the wagon should contain a complete

set. It should also contain, besides a complete supply of tubes, and photographic apparatus, a little dynamo and a windlass, so that the mules could put in their spare time in charging the storage-batteries (although this seldom has to be done, as my experience at Fort McPherson demonstrated). A thousand pounds would cover the weight of the apparatus, and with such an equipment the wagon would be as independent as a company of infantry. The operators could bunk in their ambulance, besides carrying a plentiful supply of rations." (*Phila. Med. Journ.*, Vol. 2, page 1305).

Mr. Francis C. Abbott of London, England has written on "Surgery in the Graeco-Turkish War" in which he enlarges on the use of the Roentgen Rays, and draws the following conclusions:

"The Roentgen rays should always, if possible, be available at that hospital nearest the front in which the wounds can be first properly examined and dealt with.

The electricity should be derived from a secondary battery consisting of separate covered cells charged from the nearest town, a man-of-war or other steamer, or by means of a cyclo motor, as has been recently done in the Soudan by Major Batterby, R.A.M.C.

The skiagrams should be taken on to Eastman's positive paper which is sufficiently satisfactory for the detection of foreign bodies.

The apparatus is of no use on the field where the detection of bullets can only be an incentive to premature exploration.

The less wounds are tampered with before satisfactory surroundings are reached the better. All difficult bullets should be removed by a fresh incision and the track ignored.

The modern bullet from its greater penetrating power will be much less frequently found in the body than its predecessors. It is practically aseptic and there is no urgency for removal.

The hole of entrance is often extremely small. Suppuration is generally due to pieces of clothes carried into the tissues. Superficial septic sinuses should be excised. Wounds of lung by modern bullets run a comparatively favorable course.

Small-bore bullets may bore through a bone without causing any line of fracture whatever and every degree of injury from this up to the most extensive comminution may be met with.

Passive movements and massage when possible should be begun early in bullet wound fractures." (London *Lancet*, Vol. I for 1899, pages 80 and 152).

In diagnosing pulmonary tuberculosis, the use of these Rays has received much attention during the past year.

Dr. Richard Mühsam of Berlin, Germany has carried on a series of experiments with these Rays in experimental tuberculosis, from which it may be concluded that there is little proof that these Rays will have any direct relation in curing the affection. (*Deut. Med. Wochensch.*, Vol. XXIV, page 715).

Prof. H. Rieder of Munich, Bavaria comes to the same conclusion as Dr. Mühsam after carrying on experiments with guinea pigs, as well as with mice and rabbits. He also found that the local tuberculosis was restrained, and in several cases the general infection was somewhat delayed, but the animals finally died and quite as after just as rapidly as the control animals. He states that the results of the treatment of pulmonary tuberculosis by these Rays were quite contradictory, although they have not yet been very extensively tried. (*Muench. Med. Wochensch.*, Vol. 46, page 950).

Dr. Francis H. Williams of Boston, Mass. has something to say in relation to the early diagnosis of pulmonary tuberculosis, and read a paper on the X-Ray examinations as an aid in such early diagnosis, before the Boston Society for

Medical Improvement on February 27th last, in which he concludes as follows:

"I do not advocate giving up any other methods for making an early diagnosis,—we need all the aids we can have,—but I do strongly urge the addition to them of careful x-ray examinations, and I desire to emphasize the value of this method as a means of indicating early certain abnormal conditions of the lungs. We have two methods of examining the heart and lungs—auscultation and percussion. Each of these in suitable cases gives valuable information; they require a trained ear and experience with many patients to make them serviceable. In some cases auscultation is of the greater value, in others percussion; more frequently they are best when used together. To these we may now add a third method, which also requires special training, that of x-ray examinations. There are diseases in which each of the three methods may render the chief service, and each may in other cases be of little value. Usually, they should be used together: each supplements the other.

It seems well to repeat again, that even *fear* of burns in the use of x-ray examinations is unnecessary. I have made more than 2,000 of these examinations and no patient has received any burn or even inconvenience from them. Simple precautions, which may easily and should always be taken, prevent any *risk* even of injury." (*Boston Med. and Surg. Journ.*, Vol. CXL, page 513). The discussion which followed was interesting and of value. (*Boston Med. and Surg. Journ.*, Vol. CXL, page 513).

Later Dr. Williams again considered this subject by reading a paper on "Roentgen Ray Examinations in Incipient Pulmonary Tuberculosis," before the meeting of the American Climatological Association held in New York City in May last. His closing remarks are as follows:

"I wish to emphasize the fact that signs may be obtained by an X-ray examination when the disease in limited not

only to one side, but is just beginning even on that side, before there are physical signs in the first lung or cough.

It is interesting to note that X-ray examinations show that the disease begins oftener in the right than in the left apex.

In conclusion, I desire to urge the adoption of a method which aids in the early detection of pulmonary tuberculosis. First, because an early diagnosis gives the best opportunity to arrest the disease; and, second, because patients may then be taught early simple precautions which will prevent them from being a source of contagion to others should cough and expectoration develop."

The Swiss correspondent to the London *Lancet* wrote to the Editor as follows:

"*Roentgen Rays in Cases of Phthisis.*

Dr. von Beust mentions a case of doubtful phthisis with severe and prolonged catarrhal symptoms and hectic fever, bacteriological evidence being negative. The Roentgen rays showed a darker shade of the whole left lung probably due to hyperæmia and a darker shadow in the centre and towards the apex of the same lung where two weeks later bronchial breathing made an appearance. Both the darker shadow and the bronchial breathing disappeared on convalescence. Professor Pernet of the Physical Laboratory of Zürich exhibited the skiagram."

There has been so much written on this subject that it would be quite out of the question to go on further expanding on the different points brought out by the various observers. It will therefore only be useful to record here a few of the prominent writers on this topic, stating where the reports of their results may be found.

Dr. L. Stembo of Wilna, Russia offers some "Contributions upon the Diagnostic Value of X-Ray Examinations," having relation to a case of pneumothorax. (*Deut. Med. Wochensch.*, Vol. XXV, page 454).

Dr. Hugh Walsham of London, England has written on "The X-Rays in Prognosis of Pulmonary Tuberculosis." (London *Lancet*, Vol. II for 1899, page 152).

Dr. A. W. Crane of Kalamazoo, Mich. has written a prize essay on "Skiascopy of the Respiratory Organs" in which he goes over the whole subject in a very detailed manner. (*Phila. Monthly Med. Journ.*, Vol. I, page 154).

Dr. Walter B. Metcalf of Chicago, Ills. has written an article on his "Original X-Ray Work and Its Value to Stomach-Diagnosis" in which he points out that the work done proves that its use is practical and broad in its scope. It "is accomplished by filling the stomach, cavities, or tracts with what I have termed my bismuth emulsion. Bismuth, a metal, is impervious to the x-ray as compared with animal tissue and bone, thus making it possible to see the shadow outlines of the cavities or tracts filled with the bismuth through either animal tissue or bone. Experiment showed that it was not necessary to have the dry metal, but that if it be held in suspension, its opacity is governed by the percentage of bismuth present. The bismuth emulsion is nontoxic, nonirritating, and can be made antiseptic, making it possible to fill any accessible cavity." (*Phila. Med. Journ.*, Vol. 4, page 401).

Dr. Peter Bade of Bonn, Rhenish Prussia suggests "A New Method of Roentgen-Photography of the Stomach" in which he does not make use of a substance impermeable to the X-Rays when determining border lines. He distends the stomach with air by which means the X-Rays pass through the body more readily and are not hindered as in Dr. Metcalf's plan. (*Deut. Med. Wochensch.*, Vol. XXV, page 627).

Dr. Ringel of Hamburg, Germany has followed up the experiments of some of the previous investigators, and confirms their observations that the different forms of renal calculi vary in their opacity to the Roentgen Rays, and a positive diagnosis is the only one that can be depended

upon, for certain class of calculi may be present but not necessarily detected. (*Centralbl. für Chirurg*, Vol. 25, page 1217).

Dr. Robert Abbe of New York City has made a study of renal calculi by means of these Rays, and has written an article on his "Observations on the Detection of Small Renal Calculi by the Roentgen Rays." He gives the history of some twenty cases of which he tabulates eighteen collected from the reports of others. The other two cases are personal ones in which the calculi were small and encysted in the tissue quite completely. (*Annals of Surgery*, Vol. XXX, page 178).

Dr. Hans Wagner of Breslar, Prussia has carried on a series of investigations on "The Use of the Roentgen Rays in the Diagnosis of Renal Calculus." (*Centralbl. für Chirurg.*, Vol. 26, page 230).

Dr. Charles C. Leonard of Philadelphia, Pa. also writes on the same topic and in the same Journal (Vol. 26, page 234). He has used these Rays in seventeen cases of supposed renal calculus, in all of which he has succeeded in obtaining an outline of the kidney. In eleven he detected stone in the kidney which was confirmed by operation. For those who desire to read the same paper, in English, by Dr. Leonard, the *Philadelphia Medical Journal* may be consulted (Vol. 3, page 886).

"The Practical Application of the Skiascope" as the most accurate means of refracting the eye has been written upon by Dr. J. W. Sherer of Kansas City, Mo. He states that "The skiascope is capable of revealing very exactly the total refraction of the eye in every meridian, and especially of the central visual area of the cornea." He concludes as follows: "If those of my colleagues who have found the skiascope unsatisfactory and unreliable will try it with the suggestions I have made, I am confident they will not be disappointed, but will concede its real value." (*N. Y. Med. Journ.*, Vol. LXIX, page 525).

Dr. William M. Sweet of Philadelphia, Pa. records his observations in eighteen cases as a result of two years' work with these Rays in locating foreign bodies in the eye. He has devised a pair of forceps especially intended for the removal of metal from the eye, but as yet no opportunity has presented to determine its value. (*Phila. Med. Journ.*, Vol. 4, page 718).

Dr. Peter Bade of Bonn, Rhenish Prussia has also worked with these Rays from the obstetrician's standpoint. He gives a "Short Description of Ten Roentgen-Ray Examinations of the Fetus." The study of the development of the osseous tissues in from 10 to 18 weeks' fetuses is interesting. (*Centralbl. für Gyn.*, Vol. 23, page 1031).

Dr. H. Varnier of Paris, France has continued his experiments upon the cadaver with the Roentgen Rays. He has also been able, by lengthening the time of exposure, to obtain an outline of the foetal head in the living pregnant uterus, and thus determine whether or not it had entered the pelvis. If the mother is placed in the dorsal position the shadow of her vertebral column and of the limbs of the foetus will not give a tracing to interfere with the observation of the foetal head. (*Annal. de Gynécol.*, Vol. LI, page 278).

Experiments have been undertaken which have about proven that the ultra-violet rays of the spectrum differ from Roentgen Rays and are present in abundance when the Roentgen tubes are used. It was this discovery which lead to the suggestion that these Rays might be so modified, by cutting out the injurious violet rays, as to make them of value therapeutically. Such screened Rays have been used to some little extent in cases of eczema where they have eradicated the disease and only left slight inconspicuous scars.

Dr. R. Hahn has reported two cases of chronic eczema of the legs in which complete recovery followed after a few exposures. (*Centralbl. für Chirurg.*, Vol 26, page 317).

Dr. C. Thurstan Holland of Liverpool, England reports the history of a case of eczema treated by X-Rays. He explains their action as rather that of a stimulant of the tissues throughout the diseased area, thus enabling them to bring about recovery. (*Brit. Med. Journ.*, Vol. I for 1899, page 1024).

Sycosis and favus are now to be added to the list of those affections in which these Rays have given evidence of being beneficial. At a meeting of the Imperio-Royal Society of Physicians of Vienna, Austria on June 2nd last, Dr. L. Freund presented three patients who had been cured "in from seven to thirteen exposures." (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. 46, page 575).

Dr. Albers-Schönberg of Hamburg, Germany has made a careful study of the action of these Rays for the last few years, in the treatment of lupus, chronic eczema, favus and psoriasis. His results are interesting. (*Muench. Med. Wochensch.*, Vol. 45, page 1577). Again he reports "On the Treatment of Lupus and Chronic Eczema by the Roentgen Rays." His cases of lupus were two severe ones of the face, and in warning others against using too powerful Rays, he states that he protected the healthy skin by means of sheets of lead. (*Fortschr. auf den Gebiete der Roentgenstr.* Vol. II, page 20).

Dr. C. Thurstan Holland of Liverpool, England reports two cases of tuberculous dermatitis treated by the X-Rays. (*Archives of the Roentgen Ray*, Vol. III, page 112).

Dr. Finsen of Copenhagen, Denmark excited great interest at the Tuberculosis Congress held in Paris in 1898 when he reported his results in the treatment of lupus and other affections by means of concentrated light. His principal assistant, Dr. Valdemar Bie, has now undertaken to describe Dr. Finsen's methods and results which appeared in the *British Medical Journal* (Vol. II for 1899, page 825).

"The readers of this JOURNAL know the name of Finsen from his red-light treatment of the exanthemata of the

different eruptive diseases, especially small-pox (for instance, BRITISH MEDICAL JOURNAL, December 7th, 1895). More recently Dr. Finsen has devised another method, applying light for therapeutic purposes; the technique of this method is now so far perfected, and it has been tried in so many cases, that it deserves to be more extensively known.

Dr. Finsen's treatment of small-pox was, as is well known, founded on the following considerations:

As the "chemical" (blue, violet, and ultraviolet) rays of light are capable of causing an inflammation (erythema solare) of the healthy skin, it might be assumed that they would equally be capable of aggravating pre-existing inflammations. In other words, if the diseased skin be protected against the injurious action of the chemical rays of light, it will be possible to diminish the intensity of the inflammation, and thus prevent suppuration. The object is therefore to exclude the chemical rays of light which are injurious to the skin. In the new way of treatment devised by Finsen these rays are now used as curative agents. The method consists in treating local superficial bacterial skin diseases by the concentrated chemical rays of light.

The experimentally proved data on which the method is founded are the following:

1. The bactericidal property of the chemical rays of light.
2. The power of the chemical rays of light to produce an inflammation of the skin (erythema solare).
3. The power of the chemical rays of light to penetrate the skin."

.....

"The particular question which is of the greatest interest in this connection, is the following: Whether the bactericidal property is essentially attached to a single part of the spectrum or whether it resides only in the whole uncolored light. The most trustworthy examinations have given the result that it is especially due to the blue and violet rays" .....

"On the other hand, the red, yellow, and green are useless. Another condition for the advantageous use of the bactericidal property of the light therapeutically is that the bacteria are quickly killed." .....

"It is only when the light is concentrated in such a way that it contains as many blue, violet, and ultra-violet rays as possible that its bactericidal property becomes so powerful that it can be used therapeutically with advantage. That concentrated electric light, which Finsen now uses for the treatment of patients, kills the bacteria till now examined in a few seconds when they are spread in a stratum of agar about 1-5 mm. thick." .....

"The old name of erythema solare (erythema caloricum) proves that this disease was supposed to be due to a too intense heating of the skin consequent on the heat that always is inseparable from the light." .....

"It is still impossible to decide finally of what importance this photo-chemical erythema is in regard of treating bacterial skin diseases with concentrated chemical rays of light; but that at any rate it is not quite insignificant for the treatment of lupus vulgaris may be well considered probable, in view of the trials made of other methods of treatment which tend to cause an inflammation of the skin."

.....

"The power of the chemical rays of light to penetrate the skin by placing small sealed glass tubes with muriate of silver under the skin of dogs and cats" was next investigated. "Then he allowed some of these animals to remain in the dark while he exposed the rest of them to the direct sunlight. After an hour he took out the tubes; and it was invariably found that the muriate of silver was blackened in those animals exposed to the sun, but not in those kept in the dark. The chemical rays of light can then penetrate the skin. Finsen thus proved that they penetrate far more easily in bloodless tissues than those filled with blood."

.....

Based on these three experimentally-proved facts of—The bactericidal property of the chemical rays of light, The power of the chemical rays of light to produce an inflammation of the skin and The power of the chemical rays of light to penetrate the skin, "this method of treatment is so rational that objections can scarcely be raised against it from a theoretical point of view. In the treatment of patients sunlight is used in the summer, when the sky is bright, otherwise the light of electric arc lamps of 50 to 80 ampères. As already explained, it is only by concentration that the light becomes so powerful that its bactericidal property can be used in treatment. In order to avoid burning the skin it is also necessary to cool the light. This double object—to make the light stronger and cooler—is attained, in regard to the sunlight, by an apparatus such as is shown (a particularly constructed lens)".....
"By making the lens of a blue liquid instead of solid glass a considerable cooling of the light will be obtained, because water absorbs the ultra-red rays, and because the blue color excludes a considerable amount of the red and yellow rays. These three kinds of rays have particularly strong heating effect, while their bactericidal power is insignificant. On the other hand, the blue, violet and ultra-violet rays, which it is important to procure in as great a number as possible, are but very slightly impaired by passing through the blue liquid." A particular piece of apparatus is employed for concentrating the liquid arc light when used. "Lenses of quartz are used because this material in a far higher degree than glass allows the ultra-violet rays of shortest wave-length to pass through, and it is just the ultra-violet rays that have a considerable bactericidal effect. The apparatus for concentrating the sunlight may, on the other hand, be made of glass, because all the ultra-violet rays of the sunlight have so long a wave-length that they can pass through glass; those

of a shorter wave-length are already absorbed by the atmosphere." . . . . . .

"Four such pieces of apparatus for concentrating are fixed to an iron ring round each lamp, this ring again being fixed to the ceiling by four iron supports. The lamp is movable up and down by the mechanism and can be put exactly into the center of the ring by the aid of four strings which are connected with screws in the iron support." By certain manipulations "an area of skin of 1.5 centimetre in diameter is treated for one hour each day. The treated skin reddens and swells, a bulla may appear, but necrosis has never been observed." . . . . . .

"We have tried to treat different skin-diseases known or supposed to be of microbic origin, but it is only of lupus vulgaris, lupus erythematosus, and alopecia areata, that we have treated a number of cases great enough to estimate the value of the method." Some 350 cases of lupus vulgaris altogether have been treated. "The first patients were treated entirely by light; the same thing is done with all the slighter cases; on the other hand, in the more serious cases the treatment by light is assisted by treatment with pyrogallic acid ointment, in order to make the skin as smooth and easily penetrable by the light as possible. While one part is being treated by light, the pyrogallic acid ointment is put on another part; when the cauterisation is healed by a zinc ointment this area of skin is treated by light; this treatment with ointment is not necessary for obtaining a good result, but it saves much time for the patient. All ulcerations are kept free from crusts by a cataplasm of a boric acid solution. The mucous membranes are touched with a solution of iodine and iodide of potassium (1:2:2), or are treated with the galvano-cautery.

For the present, at least, only the skin, the hard palate, the front part of the septum nasi, tongue, and the mucous membrane of the cheek, can be cured by this method. In

none of the cases has the treatment been quite without effect, but in about 5 cases the improvement was very slow, either because the disease was progressing so rapidly that it was extending in one place while the treatment went on in another, or because the lupus was so deep that the light could only with difficulty penetrate to it. In all the 350 other cases the result of the treatment has been satisfactory. Of course it takes some time—until all the diseased tissue is thoroughly treated and the formation of scar tissue has begun—before any improvement is visible; but from the moment it begins it is continued without interruption until the last nodule of the lupus patch has disappeared. In all these 350 cases this result has been so certain and so constant that there is even reason to doubt the accuracy of the diagnosis of lupus vulgaris when this method of treatment appears to be ineffective."

. . . . . .

"The principal advantages of the method are, besides its reliability, its excellent cosmetic results, the infrequency of relapses and their slight extent, and the fact that the treatment is painless.

The good cosmetic result is due to the fact that there is no destruction of tissue, healthy or diseased. It is for the same reason that the results in respect to relapse are so favorable. One may, without harm, treat both the diseased tissue and the apparently healthy surrounding skin until one is fairly sure of having destroyed all the disease germs." . . . . . .

"The treatment of lupus erythematosus has in many cases given excellent results—permanent recovery and firm scars. Nevertheless, the effect of the treatment is not nearly so sure as it is in the case of lupus vulgaris." . . .

"As the indication for the treatment by concentrated chemical rays of light is that the disease must be superficial, local, and bacterial, and as it is at least possible that

alopecia areata is due to an infection, we have tried to treat this disease. In January, 1899 when the first experiments were published in Danish, 7 cases altogether had been cured." . . . . . .

"On the whole the trials made till now look promising."

Saligenin (produced synthetically from Phenol and Formaldehyde) has received little attention in the current literature of the year. A new condensation product however under the name of "Antiarthrin" has been brought out and already used to some extent. It is a product formed by the combination of this agent with tannin. It is quite unstable and must be kept thoroughly dry to remain stable any length of time. Solutions rapidly decompose. It is recommended to give it only in the form of powder or tablets in doses of 6 to 10 grammes (about 90 to 150 grains) in 24 hours. It is reported to be non-toxic and to give rapid relief from pain when used for chronic rheumatism and gout. It acts very energetically as a diuretic, causing the elimination of large quantities of uric acid. The swelling of the joints and stiffness are rapidly reduced and the general health is reported to be improved.

Dr. F. Schaefer reports having treated sixty cases of gout and rheumatism with this condensation product with generally good results. (*Pharm. Journ.*, Vol. VIII, Fourth Series, page 583).

Salipyrin (reported to be a true Salicylate of Antipyrin) has pretty well established its reputation and is considerably used although little commented upon.

Dr. A. Butler Harris of Loughton, Essex Co., England writes to the Editors of the London *Lancet* as follows:

"As far as I can gather this drug appears to be but little known and less used in this country. In Germany its specific action in influenza has already been widely recognised. During the present epidemic I have used salipyrin very largely and my experience has been such that I think

a therapeutic note is justified in THE LANCET. Given in a mild case early enough the disease is cut short in a few hours; in what would be a severe case the pain is quickly removed, the temperature falls gradually, and, what is most important, there is no collapse, depression, or cardiac weakness from the action of the drug. Salipyrin is a salicylate of antipyrin and is supposed to break up in the alimentary canal into salicylic acid and antipyrin. It does not appear, however, that the depressing effects of antipyrin are manifested where salipyrin is used; the action seems to be chiefly antiseptic and anti-malarial. I have given it in three-grain tabloids, from three to six grains every three hours, according to the severity of the case." (London *Lancet*, Vol. I for 1899, page 797).

The above letter called out the following from Dr. H. Lyon Smith:

"In THE LANCET of March 18th appears a letter from Dr. Butler Harris drawing attention to the excellent results obtained by the use of salipyrin in influenza. As I have been using a similar compound for two or three years with most rapid relief of the headache, backache, fever, and malaise of influenza, and without any untoward symptoms following its use, I beg to submit it to the readers of THE LANCET. The formula I generally use is as follows: acetanilide, 30 grains; spirit of chloroform, two drachms; spirit of camphor, one drachm; salicylate of soda, one and a half drachms; water to six ounces; one ounce to be taken every four hours until relieved. In dispensing this, owing to the slight solubility of acetanilide, the spirit should be added first and the water added by degrees. The mixture contains always light flocculent crystalline masses floating near the surface and directions have to be given that the mixture must be well shaken each time of taking. Even in cases where the pulse is most feeble I have seen rapid improvement without the slightest bad symptom, evidently owing in some measure to the stimulating effect of the cam-

phor and alcohol. In most cases the sense of relief is attended by copious perspiration. The cost of the above combination is so much less than salipyrin that I recommend it especially to those practitioners who like myself have a great number of poorer-class patients who cannot afford to pay for very expensive prescriptions. I have three times had occasion to use it myself when attacked by influenza and each time with rapid convalescence, and in over 100 cases among my patients the compound has been invariably successful." (London *Lancet*, Vol. I for 1899, page 865).

At the meeting of the International Congress of Gynecology and Obstetrics held in Amsterdam in August last Dr. Oscar Beuttner of Geneva, Switzerland read a paper on the use of this agent in gynecology, and reported some 24 cases in which he met with success.

Nothing has been heard of the new compounds alluded to here last year called "Ferri-Salipyrin," "Nickel-Salipyrin" and "Cobalt-Salipyrin."

Salitannol, the new antiseptic condensation product (alluded to here last year) resulting from the action of Phosphorus Oxychloride upon a mixture of Salicylic Acid and Gallic Acid in molecular quantities, has not been commented upon in the literature of the past year.

Salol (Phenyl Salicylate)—officinal—continues to be a pretty generally used agent throughout the medical world, and now that its official character is well established, possibly less and less comment will be called for in the current literature. However it may be of value to allude to a few special uses and combinations which have been suggested throughout the year.

In the treatment of cystitis, a combination of Salol 2 parts, Salipyrin 1 part and Camphor Bromide 1 part has been recommended.

In the treatment of acute amygdalitis, Dr. Carron de la Carrière recommends the following formula:

Salol	4 grammes	(61.7 grains)	
Oil of Sweet Almonds	8 "	(123.5 ")	
Acacia	8 "	(123.5 ")	
Simple Syrup	50 "	(about 1½ ounces)	
Distilled Water	130 "	(" 4½ ")	
Essence of Peppermint	sufficient quantity		

The dose is a tablespoonful every two hours. (*Le Progrès Médical*, Vol. IX, 3rd series, page 390).

For the stomatitis so often noticed in smokers, the following combination has been suggested: Salol 1 part, Catechu 2 parts, and a small quantity of Essence of Peppermint.

In burns of the second degree a combination of Salol, Cocaine Hydrochlorate and Vaselin has been made use of.

As an ointment for chapped hands: Menthol 1 part, Salol 2 parts, Olive Oil 10 parts and Lanolin 30 parts.

As an ointment for the treatment of gonorrheal rheumatism, the following has been suggested: Menthol 5 parts, Salol 8 parts, Ether 8 parts and Lanolin 60 parts.

Dr. Viallon of Dijon, France finds a Salol Tri-bromide superior to potassium bromide as a hypnotic in many cases, but it is especially valuable as an alternate of the latter salt. He has employed it as a hypnotic in 25 insane patients. In certain chronic affections like paretic dementia with periodic excitement, 2 grammes (about 30 grains) if given at bedtime often produced sleep, and always had a marked calming effect. It is of no value apparently in the insomnia of hysteria and melancholia or where there is any great degree of nervous excitement. (*La Semaine Médicale*, Vol. 19, page 104).

Salophen (Acetyl-Para-Amido-Salol) continues to be found a useful agent but has received little direct comment in the current literature of the year.

Dr. Creslé of Toulouse, France, in a thesis he wrote, emphasized the efficient action of this agent in cases of acute and subacute rheumatism, but called attention to the fact

that it is less constant in its action than sodium salicylate. Other drugs also show better results in chronic and blennorrhagic rheumatism. It however has apparently an incontestible analgesic action even though nothing further can be stated to its credit in many cases. He concludes from all the data he can obtain that 4 grammes (61.7 grains) is about the medium dose which should be given daily, of course, varied according to the case treated. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. III, new series, page 1206).

The prompt action of this agent in influenza has been emphasized and attention called to its comparative harmlessness, tastelessness and lack of disagreeable sequelae, thus enabling the patient to continue its use for a lengthy period. Its action is prompt and is increased by administering with carbonated mineral waters. Very satisfactory results have followed from doses of 500 milligrammes (7.7 grains) given at intervals of two to three hours in attacks of influenza. Small doses are excellent as a prophylactic during epidemics.

Sanatogen, the albuminous preparation consisting of Sodium and Casein Glycerino-Phosphate prepared from Milk Casein, has not been heard of in the current literature of the year.

Sanose (the albuminous preparation containing 80 per cent. Casein and 20 per cent. Albumose, which is not a chemical combination but rather a mechanical mixture) has been kept prominently before the medical profession by those interested in presenting its varied claims. It has been little commented upon directly and appears most prominently in the advertising pages of the journals.

Dr. Biesenthal of Berlin, Germany describes this new food at some length. He has met with remarkable success in feeding infants and invalids. He points out its great advantage of having no taste and thus patients, especially children, take it very willingly. He calls attention to its superiority over Nutrose (the soluble sodium salt of casein)

in that the casein of the latter is in thick and indigestible clots, whereas in Sanose the casein is finely divided and therefore naturally more easily digested. Cow's milk, it appears, is rendered more digestible by the addition of albumose. He speaks of one case in particular which was apparently an unsatisfactory one to choose for the new preparation, for the infant was very much emaciated, but the result was excellent. He alludes to the diarrhea so often noticed after administering Somatose, and that it is due to the presence of the chlorides contained in the peptone and extracted from the meat. These are not present in Sanose, and therefore that peculiar intestinal irritation is avoided. (*Therap. Monats.*, Vol. XIII, page 204). He later gives some further details, which is his third contribution within a short period of time, in regard to the manner in which Sanose may be utilized as a food. (*Therap. Monats.*, Vol. XIII, page 268).

Somatose—the tonic and nutrient—has taken a very prominent place in the list of agents used by the medical practitioner. It may be well to repeat here what it really is. It has been very well described by Drs. Thomas Stevenson and Arthur P. Luff of London, England as being "a meat preparation in which the albumin of the meat is mainly converted into albumoses. It is a yellow powder, freely soluble in water, and forming a practically tasteless solution. In its form as a powder it practically represents meat almost desiccated, the albumin of which has been mainly converted into albumoses. This is shown by the following results of an analysis that we have made of the preparation which shows the amounts of its more important constituents:—

Deutero-albumose	51.60	per cent.
Hetero-albumose	13.40	"
Peptone	5.00	"
Water	11.04	"
Mineral matter	5.02	"

It is not contended that a person's life could be sustained by exclusive feeding on this substance which only purports to be a useful adjunct to other foods and which, though in itself of direct nutritive value, is also a stimulant to the digestive functions and a substance which therefore enables patients to tide over critical stages of illness. Many experiments have been conducted by others, which show that somatose is well borne by invalids, that it produces no disturbances of the digestive system, and that persons taking it along with other suitable food gain in weight and in strength. In view of the medical uses to which this preparation might be put as a meat nutrient we have been requested to investigate its effects on patients suffering from various diseases and on convalescents, so as to observe its influence on nitrogen elimination, and, what is of much greater importance, to ascertain whether its administration to such patients ever causes albuminuria, albumosuria, or peptonuria. It is evident should any one of these morbid conditions be produced that the employment of albumoses is to be deprecated."

These observers draw the following conclusions:

"As the result of our observations and experiments we have arrived at the following conclusions: (1) that somatose is a true meat nutrient possessing restorative and stimulating powers; (2) that it is well borne by delicate patients; (3) that it improves digestion and causes no gastro-intestinal disturbances; (4) that it has a favourable effect on general metabolism; and (5) that it has no irritant effect on the kidneys and that it never gives rise to albuminuria, albumosuria, or peptonuria. In those cases in which albuminuria existed prior to the administration of somatose the albumin gradually disappeared from the urine durings its administration." (London *Lancet*, Vol. II for 1899, page 883).

Dr. Georg Joachim of Berlin, Germany "has found that patients are often unable to prepare solutions of somatose.

The best method of preparing it is as follows: Fill a wineglass with cold water, and then add three teaspoonfuls of somatose, which must be sprinkled on the top of the water. The wineglass should be moved as little as possible, so that the somatose remains on the surface of the water. After a few hours the solution is ready for use. The quantity required during the day is best prepared the evening before. The three teaspoonfuls of somatose is sufficient for the day. In the morning a third part may be taken with milk, at lunch, and later at dinner; the remainder should be mixed with soup or porter." (*Epitome of Brit. Med. Journ.*, Vol. I for 1899, page 8).

Dr. Henri Fournier of France recommends this agent in the treatment of secondary syphilis, particularly in cases showing very decided wasting, also in cases in which the blood shows a decreased amount of haemoglobin when associated with vertigo, insomnia and gastralgia. The syphilitic symptoms appear to abate when the patient begins to assimilate more food, and the addition of Somatose to cow's milk facilitates the digestion. He recommends the use of as small doses as 12 grammes (185.2 grains). He has obtained good results in the treatment of chlorosis and in the anaemia caused by malaria. His most pronounced results were obtained in cases of mercurial stomatitis. (*Journ. des Mal. Cutan. et Syph.*, Vol. X, page 194).

This agent has obtained additional notoriety among a certain class of the laity from the published report that the Pope's recovery after a recent illness and at such an advanced age, was largely due to its use, when his life had been almost despaired of. His physician in attendance administered it with chicken jelly and yoke of egg, taken every two hours with sweetened cognac brandy in the intervals.

Strontium, in the form of its various salts, has made a very marked impression upon some practitioners, particularly Strontium Bromide, and considerably more has

been written upon it during the past year than in the year previous.

Dr. A. Lockhart Gillespie of Edinburgh, Scotland has published a "Note on the Action of Bromide and Iodide of Strontium on Exophthalmic Goitre in Children." He gives his reasons why these salts of Strontium should be used instead of the corresponding sodium or potassium salts.

"Strontium salts do not seem to cause so marked constitutional effects; none of the cases treated showed any signs of bromism or iodism. Again, it is a tenable hypothesis to suppose that salts of a metal not present in the body, except perhaps in traces, may exert a more profound effect upon an abnormal condition of the organs and upon pathological processes, even although they are not so poisonous in other directions, than the corresponding salts of metals already abundantly present in the tissues."

He gives the details of three cases and simply records three others.

He finally adds:

"One word of warning in conclusion: the strontii bromidum is deliquescent, and should be prescribed in solution, not in powder form. The dose of the bromide for an adult is generally given as from 10 to 30 grains, of the iodide from 3 to 5 grains and upwards." (*Brit. Med. Journ.*, Vol. II for 1898, page 1042). He suggests the following formula:

Strontium Bromide ...	6.0	grammes	(92.6	grains)
Strontium Iodide 12.0	"		(185.2	")
Peppermint Water 20.0	"		(308.6	")
Syrup of Peppermint..20.0	"		(308.6	")
Distilled Water 40.0	"		(617.3	")

The dose of this solution is 4.0Cc. (65 minims) three times a day. (*Klinisch-therap. Wochensch.*, Vol. VI, page 1158).

Dr. Antony Roche of Dublin, Ireland has made quite an

extended study of Strontium Bromide in the treatment of epilepsy. He has been publishing his results from time to time since 1894, and now gives "Some Further Notes on the Use of Bromide of Strontium in Epilepsy" where he states:

"I have not met any case in which the bromide of strontium given in the doses and method I will mention has failed to diminish the number of the attacks. In many instances there has been no return for periods extending to two, three, and even four years. Some of these cases may be considered "cured"—that is, that there will be no return of the attacks when the medicine is permanently left off. I cannot say definitely that this is so, for the reason that I always recommend the patients to continue the medicine, even though there has been no return for a long period. I do this all the more as I have not found the continued use of bromide of strontium to be followed by any bad consequences, and many of the patients have been taking 1 drachm daily without intermission for more than three years without any complaint. In this respect the strontium salt has an immense advantage over the potassium salt, which has frequently produced serious physical and mental changes when continued for long periods. Moreover, patients taking bromide of potassium frequently suffer from intense depression. Several of my patients were obliged to leave it off owing to this; in fact, several expressed their feelings by assuring me that they would rather suffer from the fits than from the depression produced by the medicine. I have not noticed this at all in those using the bromide of strontium. The potassium, too, is poisonous in large doses; the strontium is not."

. . . . . .

"In my earlier cases, being influenced by the remark of Brown-Séquard that the combined bromides were more useful, I gave the bromide of strontium combined with one or more of the other bromides, but for a long time I have

given that of strontium alone. I usually commence the treatment by ordering half a drachm night and morning in some vegetable tonic infusion. Should that dose not control the attacks I rapidly increase it till I have found the quantity which will suit the individual case. I direct the patient to take 30 grains at once in those cases where there is any warning of the attack and to repeat this every hour if required. By this means I have no doubt the attack has been frequently prevented. I may repeat that in my experience in order to get the full benefit of the medicine I have found it necessary to give it in large doses and to continue it for a long period. Since my first communication several members of the profession have written to me saying that in their cases they have not found the same good results. I invariably find that in these cases the dose given has been too small and consequently that my practice has not been followed. I need not say that each case requires to be studied on its own merits and any exciting or predisposing cause lessened or removed." I do not think it necessary to go any further into this question, as these notes are not upon the general medical or surgical treatment of epilepsy, but upon a special medicine, nor need I give my experience in the use of any other of the many remedies proposed. Many of these I have tried, but none have given me the same good results as I have found by the use of bromide of strontium.

"I should say, however, as I have more fully explained on a former occasion, that I regard the question of diet as one of much importance. I direct my patients to restrict themselves to fish and vegetables, and I generally find no great difficulty in having my orders carried out. When the attacks diminish in number, if I am pressed to do so I allow the more easily digested meats twice or three times in the week." (London *Lancet*, Vol. II for 1898, page 988).

He feels called upon to write again soon after on account of the numerous letters which were received from members

of the profession showing considerable interest taken in his mode of treatment, but particularly to answer some questions. He then concludes:

"As regards the practical results of this treatment I have now had for some years a considerable experience in its effects in no small number of cases. I have never met with a carefully investigated and persistently treated case in which the number of the attacks was not materially diminished and I have met with many cases in which there has been no return at all of the attacks even after an interval of so long as four years, the patients still continuing the medicine. When I remember the results produced by other modes of treatment and the unfavorable prognosis given by all writers upon this affection I cannot help thinking from its safety and success that it is worthy of extended trial. I have in this communication abstained from any discussion upon theoretical questions in connexion with this disease or of any other methods of treatment." (London *Lancet*, Vol. I for 1899, page 1089).

Dr. J. G. Smith of Hanwell, London, W, England reports on twelve cases of epileptic insanity treated by means of Strontium Bromide in which he desires to direct the "attention to a few points in connection with the action of this drug and to compare the results obtained by its use with those obtained by the use of bromide of potassium in the same cases over a corresponding period." He concludes:

"It would seem, therefore, that whilst bromide of strontium is in some cases apparently of greater value than bromide of potassium in controlling epileptic seizures, yet on account of the more rapid action of the latter and its more lasting effect, the smaller dose required, and, lastly, its cheapness, bromide of potassium must be regarded as the more generally useful drug in the treatment of epilepsy." (London *Lancet*, Vol. II for 1899, page 411). This Note of

Dr. Smith's called out a reply from Dr. Roche in which he states:

"I have read with much interest Dr. J. G. Smith's report on the use of bromide of strontium in 12 cases of epileptic insanity compared with that of the bromide of potassium in the same cases. As I have used the strontium salt for some years in a considerable number of cases of epilepsy with marked success, perhaps I may be permitted to make a few remarks upon Dr. Smith's conclusions. I am sure he will agree with me that 12 cases are far too few to base any reliable conclusions upon, but accepting the data for what they are worth, his results may be summarised as follows: (1) That the fits under the strontium were somewhat less frequent and of a milder type and the rash was much less marked; and (2) that the potassium salt required a smaller dose, the effect seemed to be more rapid and more lasting, judged only, however, by the necessity of increasing the dose of the strontium. So that in these series of cases the attacks were less, and milder, under the strontium.

Surely, therefore, his ultimate conclusion "that the bromide of potassium must be regarded as the more generally useful drug in the treatment of epilepsy," is not warranted by his facts. There is, however, one more important advantage that the strontium salt has over the potassium that Dr. Smith has not referred to—viz., the strontium salt does not produce that marked depression which the potassium does so frequently when taken for some time. In a medicine that has to be continued for years this is a most important point. I have met with more than one case of epilepsy where the patients have assured me that they would rather have the fits than suffer from the depression which is produced by the bromide of potassium. My own experience of the strontium salt as compared with the potassium is distinctly in favour of the former. Most of my patients had previously been treated with the potassium

and certainly in diminishing the number of attacks and in no small number preventing their recurrence, in the absence of depression, the strontium salt has given me remarkably successful results.

I hope Dr. Smith will continue his interesting investigation." (London *Lancet*, Vol. II for 1899, page 512).

The Lactate of Strontium has been experimented with by Dr. Sz. Bronowski of Warsaw, Russia upon animals. He finds that it produces a general lowering of the blood pressure. He then tried it clinically, producing diuresis in the majority of his cases and a diminution of the amount of albumin in the urine. He therefore reasons that it may be found of value in the treatment of those cases of renal disease which have not advanced too far. (*Wien. Med. Presse*, Vol. XL, page 178). The above results have been verified by others.

Preference is given by some observers to the use of Strontium Salicylate in the treatment of acute rheumatism as being less irritating to the alimentary tract than sodium salicylate and as not producing salicylicism.

Sulphonal (Di-Ethyl-Sulphon-Di-Methyl-Methane) continues to be as prominent an agent as heretofore. There appears to be little diminution in the number of cases of poisoning from this agent. For the use of those who care to study further the means of at least limiting the number of such cases, it may be well to simply record here the most prominent cases reported.

Mr. D. Richmond of Rochdale, England reports a case of poisoning. (*Brit. Med. Journ.*, Vol. II for 1898, page 1337).

Dr. Lovell Gulland contributed a paper on Sulphonal poisoning to the Edinburgh Medico-Chirurgical Society at its meeting on December 7th last. His experience would show that this agent should be used with much greater caution than appears to be usual at this time. (London *Lancet*, Vol. II for 1898, page 1638).

Dr. Fred. Tresilian of Enfield, London, N., England re-

ports a case of acute poisoning in which he calls attention to the fact that unfortunately many cases of toxic symptoms, some of which proved fatal, have been recorded, chiefly from asylums, and cases in which the drug had been administered frequently or continuously for weeks or months. Instances of toxic effects from comparatively small doses are much less frequent. He then relates the details of his acute case and concludes:

"Such a serious condition after 35 gr. of sulphonal, given in divided doses of 20 and 15 gr. at an interval of twenty-four hours, shows decided idiosyncrasy towards its action. It also shows that this is not a safe drug for people to keep in their houses and dose themselves with, and it also makes one feel that in this, as in most synthetic remedies, idiosyncrasy is to be remembered, and comparatively small and safe doses given at first." (*Brit. Med. Journ.*, Vol. I for 1899, page 209).

This agent has recently been employed in the treatment of chorea. Dr. J. Howe Adams of Philadelphia, Pa. contributes a paper on "The Successful Treatment of Chorea with Trional and Sulphonal." He had previously obtained some unsatisfactory results when using solution of potassium arsenite. From his present experience he would place either of these agents as not superior to or equal to but next to the arsenic preparation in obtaining efficient results. (*Archives of Pediatrics*, Vol. XVI, page 351).

Tannalbin (a compound of Tannin and Albumin) is still largely used as a valuable agent in the treatment of infantile diarrhea in both the subacute and chronic forms.

Among the many observers one, Dr. Olimpio Cozzolino, an Italian practitioner, may be mentioned. This one observer is cited here to simply bring out one point. It will be noted that he with most others begins the treatment with castor oil, and therefore may it not be very justly inferred that a large proportion of the credit of checking such a diarrhea may be attributed to the well-known ac-

tivity of this oil in not only quickly disposing of any irritant matter present in the alimentary tract, but on account of its soothing properties after such disposition. (*Gaz. degli Osped. e delle Cliniche.*, Vol. XIX, page 1447).

Tannocol is the name given to a new combination of equal parts of tannin and gelatin. It is offered in the form of a grayish-white, odorless and tasteless powder, quite insoluble in water and acids. It is therefore of value in being only decomposed when it has passed beyond the gastric secretions, producing its characteristic astringent effects where required. The dose recommended for adults is 1 gramme (15.4 grains), that for children 500 milligrammes (7.7 grains) given several times a day.

Dr. Rosenheim of Berlin, Germany has written on this agent. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 486).

Tannoform (the condensation product of Tannin and Formaldehyde) continues to be kept before the medical profession chiefly by the manufacturers, although, from the clinical observations reported, it does not appear to fill any special want. It is another of those intestinal astringent antiseptics which is supposed to split up only after reaching the intestinal tract. It has however more recently been recommended to be used externally in cases of excessive or offensive sweating, and in suppurations, to be dusted on in the form of a powder.

The dermatologists are also making use of it, and from some quarters reports are made of a large number of cases of various cutaneous affections having been treated successfully.

Dr. Karl Ullmann of Vienna, Austria has already reported 154 cases in which the powder and an ointment were employed beneficially in various skin affections. (*Centralbl. für die gesammte Therap.*, Vol., XVII, page 257.)

Another such observer is Dr. J. Arnold Goldmann of Vienna, Austria who has written an article on "The Therapeutic Value of Tannoform." He reports excellent

results in weeping and pruriginous eczemas and other skin affections. (*Wien. Med. Presse.* Vol. XL, page 342).

Tannopin (a condensation product of Tannin and Urotropin)—87 per cent. of Tannin and 13 per cent. of Urotropin—chemically known as Hexa-Methylene-Tetramine-Tannin, has been little commented upon during the past year. The only prominent observer who has reported is Dr. Carl Frohlich in an article entitled "Tannopin, a New Remedy for Diarrhea." He has observed nothing new concerning it but simply records his decision as to its being of value.

Terebene (produced by the action of strong sulphuric acid on Oil of Turpentine) has not been directly commented upon during the past year.

Theobromin (the chief base found in the seeds of Theobroma Cacao), although considerably used by practitioners, has not been specially commented upon in the current medical literature of the past year.

Thiocol is the name given to a comparatively new compound, the full name of which is Potassium Sulpho-Guaiacolate, containing 60 per cent. of Guaiacol. It is offered in the form of a colorless crystalline powder with the characteristic odor of Guaiacol but not nearly so pronounced—readily soluble in water. This latter is one of the properties which recommend it as preferable to most of the other guaiacol compounds. Naturally its principal use is in the treatment of pulmonary tuberculosis, and its claims for selection are that it does not irritate the mucous membrane and that it is far more readily assimilated than other guaiacol compounds.

Dr. Schwarz of Neustadt, Austria, is one of the prominent observers in the use of this article, giving it in varying doses up to a maximum of 14.5 grammes (about 225 grains) daily. (*Gaz. Med. Lombarda*, Vol. LVII, page 275.)

Dr. G. Rossbach of Berne, Switzerland, is another observer who has followed up experiments on animals with

this new compound and has used as strong an aqueous solution as 20 per cent. hypodermically without producing any local irritation. (*Therap. Monats.*, Vol. XIII, page 96).

Dr. Otto Marcus of Stuttgart, Germany, has employed this agent in the treatment of thirty cases of pulmonary tuberculosis, reporting that its ready administration and its freedom from any ill-effects recommend it strongly. (*Med. Corresp.-Blatt des Württ. ärztl. Landesv.*, Vol. LXIX, page 17).

An Italian physician, Prof. Luigi Maramaldi, is another observer who has used this agent in the treatment of pulmonary tuberculosis. He has found it of value even in advanced cases. His dose varied from 1 to 3 grammes (15.4 to 46.3 grains) each day. He advises not to exceed the larger dose as it apparently cannot be tolerated. He appears to be quite enthusiastic over this agent. (*The Therapist*, Vol. IX, page 122).

Drs. E. de Renzi and G. Boeri of Naples, Italy, report on its curative effects. They are evidently anxious to press its claims for they draw conclusions which, to say the least, are rather over-straining the facts in some respects. (*Deut. Med. Wochensch.*, Vol. XXV, page 521).

Thiol (synthetic Ichthyol) has now been used in some quarters quite continuously for several years, and its advantages over Ichthyol of being odorless, cheap and even more efficacious are constantly being pointed out. It is found to act as an efficient analgesic when applied externally even where the deep tissues are involved. An increased number of cases of contusions, abscesses, acute articular rheumatism, neuritis, myositis and other affections are reported where this agent has been of much value.

Dr. Walter A. Wells of Washington, D. C., has found it of value in nose and throat practice, and in writing concerning it states that he has "found it exempt from all irritating or injurious properties, even though used in the full strength. It is most valuable in gouty or rheumatic sore

throat, a fact to be expected on account of its large proportion of sulphur. On the other hand, this is suggestive in connection with theory of the relationship of the skin and nose—since affections of both are generally associated with the gouty diathesis." (*Phila. Med. Journ.*, Vol. 3, page 845).

Thiosinamin (Allyl-Sulpho-Carbamide) has not been commented upon any more frequently during the past year than in the previous one. Dr. Sinclair Tousey of New York city was then continuing his observations and contributed an article on "A Further Study of its use in the Treatment of Keloid, 'Inoperable Tumors,' and Cicatricial Conditions, Including Deafness." He undoubtedly is still observing, but has not made any further report.

Dr. Hans von Hebra of Vienna, Austria, has been making use of this agent in the treatment of sclerodermia. He presented three cases at a meeting of the Vienna Dermatological Society on January 11th last in which he had used hypodermatic injections of a 15 per cent. alcoholic solution every second day, introduced in the interscapular region. The first and second patients received twenty-four injections when the normal condition of the skin returned. In the third patient improvement was very evident after the fourth injection. (*Archiv. für Dermat. und Syph.*, Vol. XLVIII, page 120).

Thymoform, the condensation product of Thymol and Formaldehyde, has not been commented upon in the current medical literature of the past year.

Thymol (Propyl-Meta-Cresol)—officinal—is still extensively used, but little direct comment is found upon it. Its combinations with other agents are very numerous. Only two comparatively recent ones may be mentioned here. Combined with lime water and linseed oil, it is recommended as an application of some value in the treatment of burns, especially in children.

Dr. Carron de la Carrière of France recommends the following formula as a tooth wash for children:

Thymol	50.0	grammes	(771.6	grains	)
Benzoic Acid	5.0	"	(77.2	"	)
Oil of Peppermint	2.5	"	(38.5	"	)
Oil of Star Anise	2.0	"	(30.9	"	)
Tincture of Cochineal ...	6.0	"	(92.6	"	)
Alcohol (80°)	230.0	"	(about 8	ounces)	

To a glass of water add sufficient of this mixture to produce cloudiness and cleanse the teeth with this cloudy mixture every morning. He recommends its use in children over two years old only, and suggests the use of a wad of cotton as a means of applying it. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. 46, page following 444).

Thyroid Extract (Thyro-Iodin) still retains a very prominent place in the attention of practitioners throughout the medical world. It has been tried in almost every affection where there was any rational reason for its employment. Some of the applications have not been made on strictly scientific grounds but were made, it would seem, on the principle that if the usual agents do not succeed, try everything to be thought of. Therefore it is natural to find that in many of such cases little beneficial effect followed.

A specially prepared product by a patented process has been called "Thyroglandin." It is professed to contain the active principle of the fresh gland and to be four times the strength. It is offered in the form of a brownish powder, similar in appearance to dried beef meal and with a like odor.

The Paris Academy of Medicine has recently received a report from the committee they appointed to study these Thyroid products. It reports that in whatever form they are presented they are poisonous, and therefore should be classed among the poisons to be prescribed only by a physician.

At a meeting of the Paris Surgical Society on November 30th last, Dr. Quénu read a paper on the use of Thyro-Iodin in the treatment of fractures where union is delayed. He presented two cases which were treated with this agent during the whole time of healing of the fracture which united well within the customary time.

Dr. Paul Reclus also presented a case at the same meeting in which he obtained satisfactory results by using this agent.

Dr. Lambret of Lille, France, reports having used this agent for some years past, but described one particular case of fractured limb at the meeting of the Central Medical Society of the North on May 12th last. He gave 600 milligrammes (about 9.5 grains) of Thyro-Iodin each day, and the patient was able to walk on the limb on the seventeenth day. (*Le Nord Médicale*, Vol. VI, page 128).

Dr. William Murrell of Dublin, Ireland, delivered a "Clinical Lecture on a Case of Diabetes Mellitis treated with Thyroid Gland." He related a case which was attributed to a nervous disturbance, giving rise to vaso-motor paralysis. The reduction of the amount of sugar was immediate, even without restriction of the diet. He found that its action is transitory, and therefore the treatment must be kept up. He concludes that this form of treatment will be found of most value in those cases of glycosuria which occur in elderly persons in whom obesity is a prominent factor. (*The Medical Press and Circular* of Dublin, Vol. II for 1898, page 611).

An increasing amount of experimentation has been going on with preparations of Thyroid Extract in the treatment of obesity, and the evidence in its favor from some quarters seems to be quite convincing.

Dr. Nicolai Schiödte of Copenhagen, Denmark, has written an article "On the Use of Thyro-Iodin in the Treatment of Obesity." His observations covered a period of 3½ months and very evident decrease of body-weight was

demonstrated. There, however, appeared to be a considerable loss of nitrogen as well, showing a diminution in the body-proteids. When large doses were used, the patient's general condition was not at all satisfactory and the quantity had to be reduced, resulting in a return of comparative comfort. This systemic depression at times produced collapse and often suddenly, and care must be exercised. (*Archiv für Verdauungs-Krankheiten*, Vol. 5, page 1).

Dr. Wilhelm Ebstein of Göttingen, Prussia, has also written a paper with almost the same title as above, in which he opposes its use. He gives the details of seven cases. To substantiate his opinion he states that persons afflicted with a superfluous amount of fat must rely on dietetic treatment and a rational mode of living. He deplores the tendency of not only physicians but the laity in hopefully looking forward to efficient treatment from any so-called "anti-fat cure." Much harm has been done (which has been pointed out by many observers) in following the promiscuous use of this Extract by the laity. It should only be administered under a physician's prescription. He concludes that the Thyroid treatment of obesity is not only unsatisfactory on general principles but is irrational, and that other reasonable methods of treating it are available. (*Deut. Med. Wochensch.*, Vol. XXV, page 1, and concluded on page 23).

Dr. Wm. M. Polk of New York city, has written on "The Clinical Effect of Thyroid Extract upon Fibroid Tumors of the Uterus." (*Med. News*, Vol. LXXIV, page 33).

Dr. Starling Loving of Columbus, Ohio, reports on his "Successful Use of Thyroid Extract in the Treatment of a Cerebral Neoplasm." (*Phila. Monthly Medical Journ.*, Vol. I, page 359).

Drs. Wm. Mabon and Warren L. Babcock of the St. Lawrence State Hospital, Ogdensburg, N. Y., have published "A Review of the Results Obtained in the Treatment of one thousand thirty-two Collected Cases of Insanity." They

have collected statistics from various hospitals, but give a tabulated statement of sixty-one cases treated in the hospital with which they are directly connected. (*Amer. Journ. of Insanity*, Vol. LVI, page 257).

The subject of the abuse of all Thyroid preparations was brought before the Paris Academy of Medicine several months ago for the purpose of restricting the sale of them to the public. Attention was called to the fact that druggists sell them to any one who asks for them. They are even largely advertised in the lay press of France.

Dr. Byrom Bramwell of Edinburgh, Scotland, has published a "Note on the Production of Symptoms of Thyroidism in a Child at the Breast by the Administration of Thyroid Extract to the Mother—i. e., Through the Milk." He concludes with the following remarks:

"There can, I think, be no doubt that in this case the administration of thyroid extract to the mother produced symptoms of thyroidism in the child, the thyroid extract being conveyed to the child through the milk. This was noted on three occasions and it is evident that the point—whether thyroid extract given to the mother can produce symptoms of thyroidism in her child at the breast—is not merely of theoretical but of distinct practical importance." (London *Lancet*, Vol. I for 1899, page 762).

Dr. Léon Mabille of Reims, France, calls attention to his successful use of solution of potassium arsenite in doses of from five to fifteen drops daily as a corrigent in Thyroid medication. He has found that it will prevent the tachycardia, the nervous disturbances and the loss of flesh that are often noticed. (*Lyon Médical*, Vol. XC, page 598).

The use of a 1 per cent. solution of formaldehyde has been recommended as a preservative for the preparations of the Thyroid Gland. It is claimed that it does not alter the efficiency of the preparation materially, and does act as a fairly effective preservative.

Toxins (meaning all the morbific substances produced by living beings) have received little comment in the current medical literature of the past year. The only prominent allusion is that of Dr. C. M. Nicholson of St. Louis, Mo., who reports having treated four cases of inoperable sarcoma by the injection of erysipelas and prodigiosus Toxins with favorable results. In some other cases he met with no success whatever. (*Amer. Journ. of Surg. and Gyn.*, Vol. XIII, page 10).

Trikresol—the antiseptic mixture of 35 per cent. Ortho-Cresol, 40 per cent. Meta-Cresol and 25 per cent. Para-Cresol—has not been alluded to here for several years, and although it has been used during this time pretty generally it has not been commented upon directly until recently.

Dr. Granville MacGowan of California seems to have verified the statement of previous observers that it is quite a valuable agent in the treatment of alopecia areata. The eight cases he treated were cured within an average time of two months and a half. Naturally a thorough cleansing of the patch was first called for, and this was best obtained with benzine. The Trikresol was then applied without dilution to the scalp, but in a 50 per cent. alcoholic solution to the face. The applications were repeated in from four to ten days. (*Journ. of Cutan. and Genito-Urinary Diseases*, Vol. XVII, page 217).

Trional (Di-Ethyl-Sulphon-Methyl-Ethyl-Methane) continues to be used as a substitute for sulphonal, but if a record of the comments made upon it directly during the past year is to be taken as evidence, it would appear that it has not gained any ground over sulphonal.

One of the prominent observers has been Dr. J. Howe Adams of Philadelphia, Pa., who has reported on "The Successful Treatment of Chorea with Trional and Sulphonal." His report gives the same credit to this agent as to sulphonal, and may be found by referring in these pages to the latter article.

Dr. Habermann of Wismar, Germany, recommends the use of Seltzer Water as the most practical vehicle for the administration of Trional. The advantages are its perfect solution, its agreeable taste, its rapidity of action—producing sleep in about ten minutes, and without ill-effects after waking. (*Gaz. hebdom. de Méd. et de Chirurg.*, Vol. IV. new series, page 419).

Tropon is the name given to a substitute for natural albumin. It is made from two parts of albumin derived from a vegetable source and one part of albumin derived from an animal source. It contains gelatin extractives and about 90 per cent. of pure albumin. It is not a new product but it has received an increased amount of attention during the past year.

Dr. Rudolf Neumann of Würzburg, Bavaria, and Drs. Fröhner and Hoppe of Uchte in the Altmark district of Prussia have made an additional study to that of Prof. D. Finkler, proving it to be a cheap, nourishing and tasteless preparation to add to soups and other articles of food for use in the sick room. It is described as a fine, brownish powder, insoluble in water, perfectly stable and not hygroscopic. It apparently can be taken for a long period of time without disturbing the patient. It is found to be much cheaper than meat. (*Muench. Med. Wochensch.*, Vol. 46, pages 42 and 46).

A further study has been made by Dr. Rudolf Kunz as to "The Chemical Composition of Tropon and Several Tropon Nutrients" and still further by Dr. Igo Kaup on "The Digestibility and Usefulness of Tropon." (*Wien. klin. Wochensch.*, Vol. XII, pages 509 and 511).

Tuberculin (Parataloid) has received quite as much attention during the past year as previously. An increased amount of interest is taken in its action and many valuable results have been obtained.

"The value of tuberculin as a diagnostic agent in the detection of tuberculosis has received striking confirma-

tion by an experiment carried out at Windsor. The herd tested belonged to Her Majesty and consisted of 40 non-pedigree cows, mostly Shorthorns and Jerseys. At a meeting of the Society for the Prevention of Consumption and other Forms of Tuberculosis, held at Marlborough House on Dec. 20th, 1898, H. R. H. the Prince of Wales mentioned that Her Majesty had given permission for 36 cows from her home farm to be destroyed because they had been found to react after testing with tuberculin. Official sanction has now been given to the publication of the full details of the experiment in question. The 40 cows forming the herd were all in good condition and apparently healthy. They were all tested and were under the care of Mr. Allnutt and Mr. Tennant, veterinary surgeons, of Windsor. The tests were carried out on Sept. 16th and 17th, 1897, and the temperatures of the cows were taken on Sept. 14th by Mr. Tennant when with the exception of one cow in which the temperature was 104°F. all the cows had temperatures under 103°. The test was commenced on Sept. 15th, the temperature of each cow being taken just before injection and at the third, sixth, ninth, twelfth, and fifteenth hour afterwards. At least 32 cows appeared to be tuberculous, their temperature rising to 104° or more, five cows appeared to be healthy, and three were doubtful. The whole herd was killed and the carcasses were examined at the Royal Veterinary College. Of 34 animals whose temperature had risen above 104° 33 were found to be tuberculous. The remaining animal was not tuberculous but had a diseased uterus. The rise in this case was sudden and did not occur until after the twelfth hour. Of four cows which did not react three were found to be free from tubercle and the fourth had one small caseous gland in which tubercle bacilli were found. The two remaining cows which were classed as 'doubtful' were both found to be tuberculous. Professor J. McFadyean, from whose paper in the *Journal of Comparative Pathology and Therapeutics* we take these

details, points out that the herd experimented upon might reasonably have been supposed to be free from tuberculosis as the cows were living under the very best conditions. There is only one way of keeping housed cattle free from tuberculosis, says Professor McFadyean, and that is to see that no tuberculous animal is admitted among them. This plan, we are glad to see, has been adopted in the formation of the new dairy herd at Windsor, all animals purchased for it being tested and admitted only when they do not react. It will be seen that a rise after the injection of tuberculin is not proof positive of the existence of tuberculosis, since one cow which reacted had no tubercle but suffered from a diseased uterus. But in a very large proportion of cases a rise was practically pathognomonic." (London *Lancet*, Vol. I for 1899, page 1041).

"Dr. Harold Scurfield, the medical officer of health of Sunderland, read a very sensible paper on April 8th before the members of the Newcastle Farmers' Club. Dr. Scurfield's subject was the question whether the Government should take up the matter of the use of tuberculin in lessening the prevalence of tuberculosis amongst cattle and children and his reply was in the affirmative. He commenced by acquainting his audience with some evidence to show that cow's milk is a cause of tuberculosis in human beings and then went on to show how this danger might be averted. First, the milk may be rendered innocuous by being boiled or sterilised, although, of course, this is a weak policy and it is much better to attack the disease at the fountain head. Secondly, cows may be frequently inspected, but this is not of much use, for a cow may be seriously affected by tuberculosis and yet give no outward signs. Thirdly, there is the tuberculin test which is practically infallible. That this is so was very well shown by the case of Her Majesty's herd of dairy cows at Windsor, the tests in regard to which we published in our issue of April 15th. Dr. Scurfield reminded his audience that it

would be quite worth their while to adopt the use of tuberculin voluntarily, for in process of time they would get a tubercle-free herd. Moreover, people would willingly pay, and are already paying in some cases, increased sums for milk certified to have come from a cow which has been tested and which has not reacted. But the voluntary use of tuberculin can at best be of only limited extent and therefore the State should step in. Dr. Scurfield suggests that the test should only be applied by a duly qualified veterinary surgeon who should be bound under a penalty to brand any reacting animal—"that the tuberculin and the services of a veterinary surgeon to perform the test be offered free of charge to any farmer or breeder who will agree to isolate the sound from the reacting animals, and that compensation be paid for any of the branded reacting animals which on being slaughtered within a reasonable time, say one year, is found to be unfit for food." There are several other suggestions, but we have given the most important so far, but the final one runs shortly as follows: Five years after the former suggestions have become law no compensation for condemned carcasses is to be given; no milk from any tuberculous cow is to be sold; any animal may be tested by the local authorities and if reacting may be sold and fattened for killing without compensation; all cattle are to be sold with an implied warranty that they are free from tuberculosis. Dr. Scurfield's suggestions are apparently sound. Of course, they might not work when put into practice, for even the best scheme on paper sometimes fails, but we should say that they are worth a trial. The late Royal Commission on Tuberculosis, as Dr. Scurfield reminded his hearers, concluded that at present it would not be fair to blame the ordinary agriculturist for sharing in the general ignorance on the subject, but "as soon as the proper treatment and precautions have been formulated it will become his duty as well as his interest to

put himself beyond the risk of loss by confiscation." (London *Lancet*, Vol. I for 1899, page 1108).

"Most large lunatic asylums have a certain amount of farm work carried on in connexion with them and in this way Mr. Frank Perceval, medical superintendent of the Lancashire County Asylum at Whittingham, has had the opportunity of studying the incidence and effects of tuberculosis in milch cows, his statistics commencing in October, 1894. In a recently published report on the subject he says that on an average 84 per cent. of the cows at the farms of the asylum were affected with tuberculosis, and in August, 1897, it was decided that the tuberculin test should be used. The animals which did not react were separated from those which did, the latter being milked as usual and fattened off as soon as possible, but not kept longer than six months. The tuberculin was obtained from Professor McFadyean, Royal Veterinary College, London, and the dose given was from 65 to 70 minims. The number of cows tested was 270, of which 180 reacted, 85 did not react, and five were doubtful. Tuberculous disease was actually found in 175 of the 180 cases which reacted, or 97.2 per cent. Mr. Perceval is of opinion that the tuberculin test is a valuable aid in checking the spread of tuberculous disease in herds of cows inasmuch as it enables a large proportion of the diseased beasts to be isolated, but of course it does not lessen the necessity for keeping the animals under healthy conditions, the great essential being a plentiful supply of pure air. The question is obviously one of much importance in connexion with the milk-supply." (London *Lancet*, Vol. II for 1899, page 356).

"Every scientific investigation bearing upon the subject of tuberculosis in man or animals is of especial interest at the present time on account of the prominent position which this disease occupies in the minds of the medical and veterinary professions and also of the general public. Mr. M'Lauchlan Young, F.R.C.V.S., and Dr. S. H. Walker

have recently tested some 240 cattle with tuberculin, the results being followed out by a careful post-mortem examination in each case. Most of the animals were tested before removal from the farms, but in a few cases the test had to be made in the byres of the slaughter-houses after the cattle had been there for at least 24 hours. As a general rule Mr. Young applied the test and noted the effect on the living animal, whilst Dr. Walker, who was kept in ignorance of these results, conducted the post-mortem examinations. Out of 100 two-year-old bullocks 20 reacted after inoculation and one was suspected on account of a rise of temperature to 103°F. and other symptoms. All these proved to be tuberculous. In two instances (Nos. 19 and 55) there was no temperature reaction, but in each case there was found "a small calcareous tubercle about half the size of a pea in a mesenteric gland." Out of 60 heifers just under two years old six reacted and proved to be tuberculous, whilst in addition four which failed to react were proved to be infected. This was explained in two of the cases by the fact of tuberculin of more than a year old having been used and satisfactory reasons were given in the other two. 77 cows were tested and 42 were found after slaughter to be tuberculous, although only 25 had reacted. Most of them were, however, old cows in which the disease had existed extensively for some time. Out of the three bulls one was tuberculous. In the bullocks and heifers the bronchial and mediastinal glands were affected in 25 cases and the lungs in 15. The pharyngeal glands were diseased in seven and the mesenteric glands in five. In nearly all the cows the bronchial and mediastinal glands and the lungs were affected; the liver was diseased in 13 and the udder in seven. Tuberculous disease of the udder is of the utmost importance on account of its bearing on the milk-supply for human use. The writers of the report say: "We found that almost 10 per cent. of the cows had tuberculous udders and that over 16 per cent. of the tuberculous cows

had tubercle of the udder. It is to be noted that only one of the udder-affected cows could be called a 'piner,' whilst the others were ordinary dairy cows in fair condition. Too much stress cannot be laid upon the last statement as it shows the absolute unreliance to be placed upon a mere examination of dairy cows without the application of the tuberculin test." Of the whole 240 animals 31.7 per cent. were tuberculous. The report concludes with the following emphasized conclusions: "1. Our experience confirms the generally accepted opinion that tuberculin loses its virulency when kept for any length of time. 2. When used with care and under proper conditions tuberculin is a reliable diagnostic of tuberculosis in cattle, except (*a*) when tubercular lesion is minute, or (*b*) when the disease has become generalized, especially in the case of aged and emaciated animals. 3. Tuberculous udder occurs more frequently than is generally believed to be the case." (London *Lancet*, Vol. II for 1899, page 1180).

The following editorial by the Editor of the *Philadelphia Medical Journal* (Vol. 4, page 449) is pertinent right here:

"The quickness with which commercial cunning catches up scientific methods, and uses them not only against science, but against society (for which science exists), is shown by a fact that has recently come to light. It is known that after an injection with tuberculin cattle will not show a second fever-reaction within a period of several weeks. In order to deceive inspectors and buyers, many breeders and dealers have been practising the injections weekly prior to those of the buyers and inspectors, so that there is no fever-reaction when the real test should show the existence in the animals of tuberculosis. This is really more infamous than the purchase of testimonials by bribery from supposed reputable bacteriologists and experts, or the downright forgery of such testimonials—things that have more than once been proved. The law should make short shrift for such scoundrels. Another iniquity recently came

to light by means of a blunder which brought quick and deserved retribution, but which also suggests an inquiry as to the possible number of instances in which bad results are hidden by a better technic. At a great agricultural fair a large number of valuable Jersey cows suddenly died while in the exhibition grounds. Investigation proved that to give a false appearance of "large bags," milk in quantity had been injected into the glands. The maladroits had failed to sterilize the milk, and the cows succumbed to septicemia."

"A Contribution to the Study of the Infectiousness of Milk from Tuberculous Cows and as to the Value of the Tuberculin-Test" has been presented to the Veterinary High School in Berlin, Germany by Drs. Lydia Rabinowitsch and Walter Kempner. (*Zeitschr. für Hyg. und Infectionskr.*, Vol. XXX, page 251). Those who desire to read a translation in English will find it in the *Journ. of Compar. Medicine and Veterinary Archives* (Vol. XX, page 572).

Dr. Max Beck of Berlin, Germany has written on "The Diagnostic Value of Koch's Tuberculin", based on his results in the Berlin Institute for Infectious Diseases. He gives the details of some 2137 cases which have been injected. He excludes 295 cases of undoubted pulmonary tuberculosis in which injections were made during the early part of the period of six years covered by these statistics. In 1154 or 54 per cent. the diagnosis was made by means of the Tuberculin injections. He believes that Tuberculin is the most delicate means of recognizing tuberculosis. He states that whenever a patient is found to react, a tuberculous focus even though it may be small must surely be assumed as being located somewhere, either in the bronchial glands, lungs or other organs. Such foci if small may undoubtedly heal, but the affection often spreads. Thus he emphasizes the importance of the early recognition of the disease. (*Deut. Med. Wochensch.*, Vol. XXV, page 137).

Dr. Edward O. Otis of Boston, Mass. contributed "Notes on the Tuberculin Test" before the American Climatological Association at its meeting held in New York City in May last, and about the same time repeated such under the head of "Value of the Tuberculin Test in the Diagnosis of Tuberculosis" at the meeting of the American Medical Association held at Columbus, Ohio in June last. (*Journ. Amer. Med. Assoc.*, Vol. XXXIII, page 1074).

Dr. Paul Friedrich Krause of Vietz, Prussia reports his results in 41 cases with "Koch's Treatment of Tuberculosis," 30 of which were uncomplicated cases. His results were so favorable that others questioned his diagnosis in many of the cases. He classes the old Tuberculin as being safer than the new Tuberculin TR. (*Deut. Med. Wochensch.*, Vol. XXV, page 340).

The new Tuberculin TR. is still receiving some attention, although meeting with considerable opposition from many quarters.

It has appeared that up to this time the experimental stage has not been sufficiently extended to confirm its usefulness as an established agent. Dr. H. Stroebe has written a book upon "The Action of the New Tuberculin TR. upon the Tissues and Tubercle Bacilli" and in a review of his book published in the *British Medical Journal* (Vol. I for 1899, page 25) it is stated that "it is impossible to read Dr. Stroebe's excellent work without feeling how far we still are from an efficient bacteriological treatment of tuberculosis. The very threshold of the inquiry has hardly been crossed if it is still impossible to immunise animals with certainty against this dreaded disease. The great value of Dr. Stroebe's well-planned and carefully carried out investigation lies in the fact that the exact position of the subject is clearly set forth by it."

Dr. A. Mansfield Holmes of Denver, Colo., whose clinical study with the Antiphthisic Serum TR. (Fisch) was alluded to here last year, now makes a further report on its use.

He states that the present report "has been prepared with the idea of giving special attention to the following points:

First, duration of the disease at the beginning of the serum treatment;

Second, length of time spent in Colorado previous to beginning the serum treatment;

Third, condition at beginning of treatment;

Fourth, length of time under treatment;

Fifth, condition at close of treatment;

Sixth, time since close of treatment;

Seventh, present condition."

He then gives a clinical history of a series of twelve cases under what he calls "Class I. 'Pretuberculous' and Early-Stage Cases without Bacilli." Then later he reports on "Class II. Early-Stage Cases with Bacilli" under which he enumerates seven cases; "Class III. Chronic Cases of Long Standing" with four cases; "Class IV. Acute Cases with 'Mixed Infection'" with eight cases; lastly he summarizes all his cases and concludes with the statement: "In presenting this report I have endeavored to give the unfavorable as well as the favorable points observed—the disappointments as well as the hopes inspired. After sixteen months of constant study of the effects of the 'antiphthisic serum, T.R.' I am impressed with the belief that serum therapy is the coming therapy for tuberculosis." He adds a note giving a brief statement of the condition of four of his patients up to date (April 1st, 1899). (*N. Y. Med. Journ.*, Vol. LXIX, pages 405, 440 and 482).

Drs. E. L. Trudeau and E. R. Baldwin of Saranac Lake, N. Y. have continued their experiments since 1891 on the antitoxic power of serums in Tuberculin poisoning. They now report their still further results:

I. Fatal doses of tuberculin in sound animals.

II. Fatal doses in tuberculous animals.

III. Small doses in tuberculous animals to show the effect: (a) of the temperature; (b) of the local reaction.

An explanatory note states: "Under the term 'tuberculin' we here include the various extracts of tubercle bacilli, but usually mean the original Koch fluid." They are evidently undertaking their work very systematically and thoroughly. They give the following Résumé: "The results of our four years' work in experiments upon four sheep, three asses, twelve fowls, eighteen rabbits, and four hundred and fifty guinea-pigs are to be found in the following summary:

1. A sheep was injected intravenously with killed thymus cultures. The result was so unsatisfactory that the serum-tests were not conclusive.

2. Chickens were inoculated intraperitoneally with mammalian tuberculosis. The serum revealed no germicidal or inhibitive action on the tubercle bacilli, nor favorable influence on the course of the disease in guinea-pigs.

3. A sheep was injected with tuberculin. The serum was wanting in germicidal, antitoxic, or curative effect so far as tested.

4. A sheep was inoculated intravenously with non-virulent cultures. Cachexia followed, and the serum was therefore not used.

5. An ass was inoculated as in (4.); it died from pulmonary embolus. The serum was not bactericidal to tubercle bacilli.

6. An ass was inoculated with virulent tubercle bacilli and treated with tuberculin. The serum showed no germicidal nor curative, but possibly some antitoxic effect.

7. An ass was inoculated with non-virulent tubercle bacilli and treated with various extracts of tubercle bacilli and dead bacilli. The serum showed no activity.

8. Rabbits were inoculated with non-virulent and virulent tubercle bacilli, and recovered. Their serum possibly conferred some protection in tuberculin poisoning, and possibly prolonged the lives of treated guinea-pigs.

With a full appreciation of the uncertainty of correct conclusions from tests of the serums other than our own

product which were tried with tuberculin, we may state that only one indicated antitoxic power. This was obtained from a horse inoculated with non-virulent cultures.

That the apparent protection against fatal tuberculin poisoning occasionally seen was not necessarily due to the specific antitoxic power of the serums is made probable by the similar effects of physiological salt solution seen at times.

None of the serums appeared to prevent local or general reaction from small doses of tuberculin, nor to influence the temperature of tuberculous animals.

Disappointing as these results may seem, the writers feel that, in the light of recent contributions made by Ehrlich, Wasserman and Behring to our knowledge of the mechanism of immunity and antitoxin production in the body, the outlook for an efficient tuberculosis antitoxin is by no means a hopeless one." The article closes with a very full bibliography. (*Amer. Journ. Med. Sciences*, Vol. CXVI, page 692 and Vol. CXVII, page 56).

Dr. Michele Brocchieri of the University of Rome, Italy has made a critical clinical study of Tuberculin TR. in the treatment of lupus. His conclusions are: that no marked disturbances follow the injections; it appears to resolve the infiltrations; a year seems to be necessary for the full observation of what can be accomplished, and lastly it appears to confine the diffusions in a manner that would seem as if the surrounding parts were immunised. He succeeded very well with Tuberculin TR. but failed with the old Tuberculin. (*Il Policlinico*, Vol. V, page 489).

Drs. Hermann Napp and Carl Grouven of Bonn, Rhenish Prussia report the results of their extensive trials with the new Tuberculin TR. in the treatment of skin diseases. They give the details of some 39 cases, and conclude that even though it does not produce a permanent cure, it still has such a marked favorable influence in attacking the tubercular process and produces so little disturbance in the

general conditions. (*Archiv. für Dermat. und Syph.*, Vol. XLVI, page 399).

Prof. E. Maragliano of Genoa, Italy has made up what he calls an aqueous Tuberculin, by separating the bacilli by filtration from a bouillon culture and adding an amount of water equal to the bouillon taken; heating that solution for 48 hours on a water bath at a temperature from 90° to 95°C. (194° to 203°F.) and adding water to make up the loss by evaporation. After this prolonged boiling the whole is evaporated down to about $\frac{1}{10}$ of its original volume, producing a residue which is called the aqueous Tuberculin. He claims that this aqueous article does not produce abscesses at the point of injection, which is too apt to occur with the glycerin extract. His observations are of interest to those who are following up this subject. (*Berlin. klin. Wochensch.*, Vol. XXXVI, page 385).

Urosin is the name given to a new salt formed by the combination of Lithium with Quinic Acid. As is well known, quinic acid is the chief organic acid of cinchona bark. The object of course to be attained in associating quinic acid with lithium is to prevent the formation of uric acid. It is claimed to be of value in the treatment of gout. It occurs in the form of light, colorless crystals with a pleasant taste.

Dr. J. Weiss of Basel, Switzerland brings forth this new method for treating uric acid diathesis. He claims that the uric acid is eliminated in the form of hippuric acid, acting simply as an efficient diuretic. The name Urosin has apparently been given to the tablet form, which is made up as follows:

Quinic Acid	0.50	gramme	(7.7 grains)
Lithium Citrate	0.15	"	(2.5 ")
White Sugar	0.30	"	(5.0 ")

From 6 to 10 or more tablets are given each day. (*Berlin. klin. Wochensch*, Vol. XXXVI, page 297).

Urotropin (Hexa-Methylene-Tetramin)—formed by the union of Formalin and Ammonia—has received considerably more attention in the current literature of the past year than in the previous one.

Particular attention appears to have been given to its use in the treatment of cystitis.

Dr. T. Gordon Kelly of Desford, Leicester, England has used this agent for the particular purpose of rendering the urine antiseptic. Many agents were tried with varying success, but never with complete satisfaction until Urotropin was used. He particularly alludes to one case which was almost given up as being beyond medical assistance, but was so completely relieved by the use of this agent that he has become quite enthusiastic over its use, considering it quite an ideal antiseptic. (*The Therapist* (London) Vol. VIII, page 229).

Dr. S. Ehrmann of Vienna, Austria has made use of this agent in nine cases of peri-urethral abscess and cystitis after gonorrhea; in five cases of bacteriuria following chronic gonorrhea, and in chronic posterior urethritis. In this latter affection it showed marked beneficial action. In all, Dr. Ehrmann's observations comprise some thirty-two cases, and he concludes that Urotropin is one of the few of the more recent agents which he would expect to retain a permanent place in therapeutics. (*Wien. Medizin. Presse*, Vol. XL, page 1050).

Dr. F. Warburg of Cologne, Germany in writing "On Bacteriuria" reports that after having used salol without any beneficial results, he resorted to Urotropin, when the urine immediately cleared up. (*Muench. Med. Wochensch.*, Vol. 46, page 955).

Dr. T. K. Holmes of Chatham, Ontario, Canada reports his success in one case of cystitis resulting from enlarged prostate in which tying the vas deferens and washing out the bladder with boric acid solution failed to bring relief. (*Dominion Med. Monthly*, Vol. XI, page 186).

Dr. Otto Heubner of Berlin, Germany has been making use of this agent in the treatment of cystitis in children whether of a simple or gonorrheal character. He advises its use as a sterilizing agent as a preparatory treatment in every case where an operation upon the urinary organs is to be attempted. (*Die Therap. der Gegenwart.*, Vol. I, new series, page 63).

Dr. Mark Wyman Richardson of Boston, Mass. has made a very careful study and now reports "On the Value of Urotropin as a Urinary Antiseptic, with Especial Reference to its Use in Typhoid Fever." He states that he is still working in the Pathological Laboratory of the Massachusetts General Hospital, and hopes to give a detailed account in some later paper of his experience with this agent in conditions other than typhoid fever, as his results in the latter disease are limited, but they agree with those obtained by others. (*Journ. Experimental Medicine*, Volume Fourth, page 19).

Ursal is the name given to a combination of urea with salicylic acid, and is recommended in the treatment of gout and rheumatism. It has been stated that urea has proved to be such a useful diuretic that this combination would be of special service, and therefore it is lauded as an efficient substitute for sodium salicylate and the other older preparations. The dose recommended is the same as sodium salicylate. Nothing in the way of clinical reports has yet appeared in the current literature.

Validol (a mixture of Valerianic Acid and Menthol), introduced as a stomachic and stimulant, has not been heard of in the current medical literature of the past year.

Warburg's Tincture has so well established its reputation in cases where no other remedy or combination of agents seem to succeed, that a little more attention seems to be called for in the way of accurate determination as to the active ingredients in this heterogeneous combination of medicaments. There has recently been published another

statement as to the correct formula used by Dr. Carl Warburg and it may be interesting to quote it here:

Aloes Socotrine	1 lb.
Rad. Rhei	4 ozs.
Sem. Angelicae	4 "
Confect. Damocratis	4 "
Rad. Inulae	2 "
Croci Sativi	2 "
Sem. Foeniculi	2 "
Cretae Prep	2 "
Rad. Gentianae	1 "
Rad. Zedoariae	1 "
Bacc. Cubebae	1 "
Myrrhae	1 "
Camphorae	1 "
Boleti Laricis	1 "
Spts. Tenuioris	25 pints.

This mixture is to be digested 12 hours on a water bath, strained and 10 ounces of quinine sulphate added, continuing the heat until the quinine sulphate dissolves; when cold, filter. The dose is 1 drachm to ½ an ounce. (*Chem. and Drug.*, Vol. LIV, page 705).

Surely all these ingredients are not necessary, especially when it is realized how small a quantity is present of some of those agents in any definite dose that might be taken. Some experiments have therefore been undertaken which have now extended over some years for the purpose of attempting to eliminate what might be considered the useless ingredients. All observers are aware of the fact that quinine has its individual effects and proper uses. Also that cinchona bark as a whole has its appropriate usefulness aside from the quinine in its constitution. Therefore tincture of cinchona compound has long held its place as a useful preparation. However, since the last revision of the United States Pharmacopoeia it has not proved as efficient

as heretofore, and an increasing number of observers claim that the elimination at that time of the saffron was a mistake as it had its proper function in the older preparation. The old tincture of cinchona compound of 1860 was the original Huxham's Tincture and proved its value in those days, but saffron increasing in value and becoming more expensive, the temptation to discard it was too strong and it was struck out at the last revision. If now the original Huxham's Tincture be combined with Tincture of Aloes and Myrrh in proper proportions, it would appear from clinical experience of some two years past, that the efficiency of Warburg's Tincture was actually obtained. It has long been known that myrrh had its appropriate place in the treatment of malaria, and many writers have claimed its right for consideration, but these older preparations appear to be gradually discarded for the newer and more largely advertised agents of the present day—at times without due consideration of the long effective service of the older ones. It surely does seem that an attempt should be made to obtain an efficient substitute for the composite Warburg preparation which is made up of such a variety of ingredients in such small relative proportions, when the dose is considered, that the necessity of many of them is strongly questioned.

Weights and Measures (Metric System) have received fully as much, if not more, attention during the past year than in the previous one. The medical as well as the pharmaceutical profession of Great Britain is pressing this matter more energetically and much discussion is being had over the ultimate adoption of the more modern system.

A book has appeared in London written by Mr. H. O. Arnold Forster on "The Coming of the Kilogram; or, the Battle of the Standards" in which the metric system is very fully explained and compared with the British system, which latter it shows up to great disadvantage. Those who still waver on this question but who are desirous of

learning and advancing with the times, should surely make an effort to read Mr. Forster's book.

"A RATHER amusing controversy has broken out in the *Times* on that well-worn subject, the merits and demerits of the metric system. It is amusing, partly owing to the vehemence of the controversialists, and partly owing to the manner in which certain writers have revealed how they have only now discovered—apparently between the publication of one letter and the inditing of the next—that the contemned duodecimal system presents certain practical advantages. The mere fact that the system is in such general use would make this highly probable *a priori*, for it must have obvious advantages, otherwise mankind would not so generally have set aside the decimal system suggested to him by his ten fingers which are used for counting by all savage races. As a matter of fact, anyone who will take the trouble to look into the subject must see that for many practical purposes, for small transactions and for the mental arithmetic which they involve, the duodecimal system is far more convenient. This is appreciated alike by the market woman and the stockjobber; 12 is divisible without remainder by 2, 3, 4, 6, and gives a convenient fraction when divided by 8, whereas 10 is divisible without remainder by 5 and 2 only, though it gives a convenient fraction with 4. For all calculations on paper the decimal system is far more convenient and speedy than the duodecimal. But the main argument in favour of its adoption in the United Kingdom is that the metric has already been adopted in every other country in Europe. Our adherence to our own system is said to impede commercial transactions; it certainly causes much inconvenience in scientific work. The inconvenience is, indeed, so generally recognized that the metric system is now used in almost all scientific textbooks, and by most scientific writers. The sooner this becomes universal the better. While it may be admitted that the metric system is not an ideal system, yet it has been proved to

work well in practice; on the whole it saves a great deal of time, and the existence of the two systems side by side in international scientific literature causes confusion, and involves much useless labour in conversion." (*Brit. Med. Journ.*, Vol. I for 1899, page 867).

An attempt is now being made by some of the larger commercial bodies of England to urge the Government to make the metric system compulsory in the United Kingdom on some definite date which need not necessarily be in the very near future, but some fixed date which all can prepare for in the manufacture of their preparations.

In this country the subject of the metric system is still being widely discussed and resolutions are being passed in the various societies and associations, to not only encourage but insist upon some definite steps being taken to at least see that the rising generation of students become familiar with it. Mr. H. M. Whelpley of St. Louis, Mo. is one of the most enthusiastic writers and advocates of its rapid introduction.

It apparently will be much easier to convince the pharmacist of the usefulness and convenience of this new system than the physician, especially the older members of the profession, but practically the greatest hope is to be expected from the students in both professions. Dr. E. H. Bartley of Brooklyn has written an article on "The Metric System in Prescriptions", in which he advocates its more universal application, and points out that the particular objection made to its use appears to relate to the difficulty in calculating the dose. He suggests a simple rule to obviate this difficulty. He says "a drachm of a two ounce mixture will contain as many grains or minims of any ingredient, as there are grammes or Cc. of that ingredient in the whole two ounces." He claims that if this rule be kept in mind the calculation of doses becomes easy and simple. (*Brooklyn Med. Journ.*, Vol. XIII, page 558).

A correspondent writes from Cairo, Egypt in regard to

the adoption of the metric system for the writing of prescriptions, and states: "you may be interested to know that here in Cairo there are about 150 doctors of various nationalities—viz., English, French, Italian, German, Greek, Swiss, Austrian, Polish, Native Egyptian, Syrian, Turkish. All of them (with the exception of two or three of the English contingent) write their prescriptions in the metric system.

There is a great deal too much theorising about what would or would not happen in the event of the adoption of the metric system. Let people go abroad and see it in actual operation in everyday life, before and behind the counter, in the school and the counting house; they would be convinced right away." (*Chem. and Drug.*, Vol. LIV, page 703).

In Canada probably the professions are in a little more advanced state than in Great Britain in considering the advisability of making the change to the new system. The officials there quite recognize the convenience that would result not only in their relations with the United States but with other foreign countries.

"Russian Weights and Measures are the subject of a new regulation recently officially published. According to the *Times* the Russian pound is fixed as the standard of weight and declared to be equal to 409.512 Gm., a pail or vedro is to hold thirty pounds of distilled water at $16\frac{2}{3}^{\circ}$ (Celsius), and a garnietz eight pounds of water. The unit of length is the arshin, equal to 71.12 centimetres. The metric system is to be optional, and may be used on a par with the Russian in commerce in dealing with contracts, accounts, etc., and after mutual agreement by State and municipal authorities. Private persons, however, are to be under no compulsion to use the metric system when dealing with the above-named authorities." (*Pharm. Journ.*, Vol. IX, Fourth Series, page 211).

It is interesting to learn that the Danish Government

are preparing to introduce the metric system, and have even gone so far as to draft a bill with that object, which has been warmly supported by the merchants throughout Denmark.

Curiously enough the French—the inaugurators of this system—find themselves at this date in an embarrassing position which is largely due to the English speaking people holding on to the old system. The following note describes the present condition:

"In spite of the fact that the metric system of weights and measures has been in use in France for a century, and can be enforced by the persuasive aid of the law, many pharmaciens continue to publish in their price-lists the old weights, such as ounces, pounds, &c., principally because their clients maintain the habit of ordering by these weights, just as a cook buys meat and butter by the pound. The Paris Inspector of Weights and Measures has recently written to the President of the Seine Pharmacists' Syndicate drawing attention to this state of things. He says that the old system has been illegal since 1837, and that each catalogue or price-list using it is liable to confiscation and a fine of 12f. for each copy. The Inspector adds that before taking extreme steps he desires to give a preliminary warning. He admits that pharmacists only conform to the habits of their customers, but thinks it regrettable that intellectual men like pharmacists should assist in perpetuating illegal practices." (*Chem. and Drug.* Vol. LIV, page 719).

Xeroform (Tri-Brom-Phenol Bismuth)—one of the substitutes for Iodoform—has received about as much attention during the past year as in the year previous.

Dr. Lewis S. Somers of Philadelphia, Pa. has made use of it as an antiseptic in chronic suppurative otitis media. He states that "under its use epithelial growth is promoted and cicatrization occurs at an early period, while its sedative action allays pruritus and consequently allows

of more rapid repair of the tissues." (*N. Y. Med. Journ.*, Vol. LXVIII, page 924).

Dr. Emilio Pérez Noguera, Surgeon-in-Chief of the Spanish Army Sanitary Corps reports on the use of Xeroform in the recent Cuban Campaign, in a communication to a Spanish Medical Journal in which he gives an account of his successful treatment of wounds by means of not only this agent but mercury perchloride.

"In gunshot wounds Dr. Noguera first employed prolonged irrigation with a perchloride of mercury solution of the strength of one in 1000. He then covered the orifices of entrance and exit with a thin layer of xeroform, the whole being enveloped in sublimate gauze and carbolised cotton-wool, this dressing being changed whenever signs of moisture could be detected coming through it. Under this treatment wounds healed in a most satisfactory manner without any pus, 20 or 30 days being the longest time required when the soft parts only had been injured. In the case of wounds inflicted by the cutlass the same irrigation was practised and the edges were brought together with sutures, xeroform being dusted over the surface and a dressing applied as in the case of gunshot wounds. All the cases treated in this way healed by first intention in from one to three weeks. In one case where it was impossible to bring the lips of the wound into apposition owing to there being a loss of substance the wound granulated up from the bottom without the formation of pus, healing being complete by the end of a month. No toxic effects were observed in any of the cases nor was there any tendency to form exuberant granulations. In order to see whether an absolutely dry treatment, such as could be applied on the field of battle, would succeed Dr. Noguera selected three fresh cases of gunshot wounds without injury to any important organ, and instead of immediately irrigating them he simply swabbed them out as far as possible with cotton-wool dusted over with xeroform and

dressed them with gauze and cotton-wool. One of these was left for 48 hours and the other two for three days, all being in an aseptic condition when opened. He also found that when a number of wounded were brought into close proximity xeroform dressings prevented any of them infecting others. Altogether he is strongly of opinion that this substance is very suitable for use in military surgery." (London *Lancet*, Vol. I for 1899, page 1509).

Dr. Barksy reports on his use of this agent both externally and internally in 417 cases, and formulates the following conclusions:

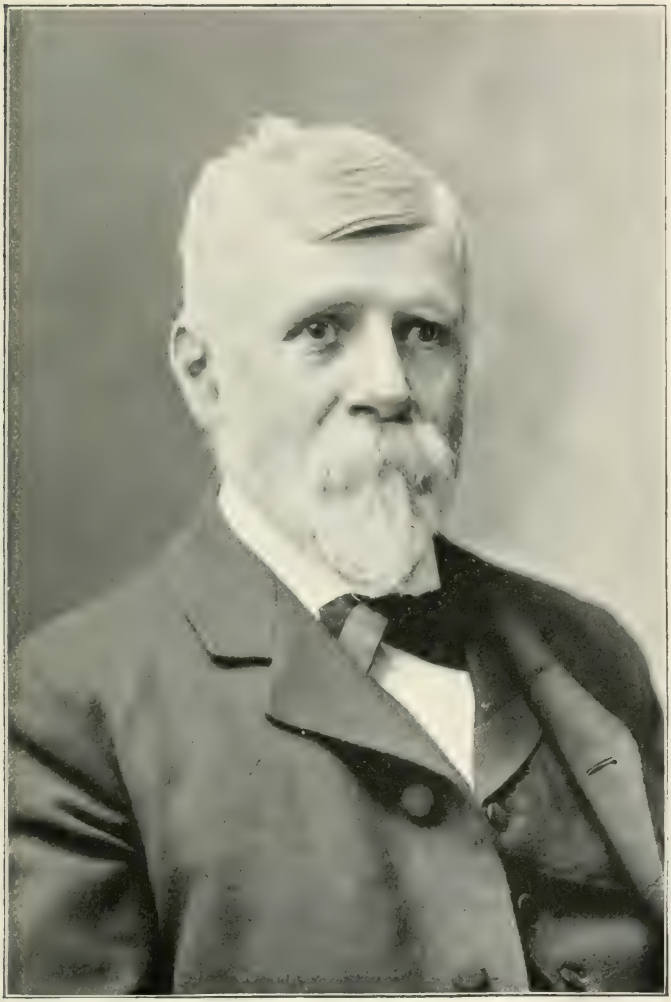
"(1) Xeroform although not a powerful antiseptic is a most serviceable one. It is decomposed by the alkalin fluids of the body into bismuth and tribromophenol. The former makes an insoluble compound with ptomains and renders innocuous, and acts mechanically to prevent the entrance of microbes. The latter constituent has a germicidal action. (2) It is not changed by light, air, or heat. It can be sterilized repeatedly up to 120° C. without alteration. (3) It is not only without odor, but it dispels the bad odors which come from ulcers of the skin, or suppurating cavities connected with the genitals or alimentary canal. (4) It possesses drying properties to a high degree. It does not form a crust over a wound, nor stick to the surface, but is carried with the discharges into the dressing. (5) It has an analgesic and a hemostatic action, and favors the growth of healthy granulations, and so hastens the healing. (6) It is not at all toxic, and does not exert any irritation either upon the wound or the surrounding tissues. It was used in the form of a powder, as a salve, in gauze, and in bougies. Internally it was given in an emulsion, the dose being from 3 to 8 grains, three times a day. It was prescribed for acute and chronic gastric troubles, and for urticaria." (*Rev. de Thérap. Médico-Chirurg.*, Vol. 66, page 356).

MEMOIR OF DR. S. B. W. McLEOD.

By Dr. John Shrady of New York County.

Dr. Samuel Brown Wylie McLeod died at his home, 339 West 23d street, New York City, August 23, 1899. He was born at Galway, Saratoga Co., N. Y., February 1, 1831, where his father was serving a country church prior to his call to New York. His grandfather, the Rev. Alexander MacLeod, of Scotland, was the pastor of the Reformed Presbyterian Church on Chambers street, east of Broadway, from 1800 to 1833. During the war of 1812–1814, this grandfather, was a trenchant supporter of the American side, and his sermons were published in answer to the views of his contemporary, the Rev. Dr. John M. Mason, the pulpit orator who advocated peace on general principles as the only true expedient in all controversies. The Doctor's father was the Rev. John Niel McLeod, who had a record of 44 years' service, most of the time as the pastor of the Reformed Presbyterian Church of West 12th Street. His mother was a daughter of John Agnew, who, on the female line, was in kinship with the anti-revolutionary Thomson family of Pittsburg and Chambersburg, Pa.—a family also distinguished in law and literature as well as in political and railroad circles. She died at a ripe age, about three years before her dutiful son, who revered her with the deepest loyalty of his nature.

The Doctor, indeed, might have boasted of a descent from most distinguished clans with traditions of the Norsemen and kingdoms on the Western Isles of Scotland—sovereignties, petty, it is true, but exceedingly well-defended. This genealogy indeed patiently traced by scholars and treasured in records dipping back into the centuries might have tempted less sturdy an heir into vain-glory and conceit. But because of this very exceptional lineage, rich in deeds of gallantry and persistent controversy, our own particular hero was stimulated to fight that *he* also might win and thus escape the stigma of even a suspected degeneracy. He appeared never quite sure whether he was of a race or a sub-species and so compromised the hazard by being intensely humanitarian. By no means a recluse, he could not be expected but to mingle with his kind as an extensive society membership will testify. Thus he was a permanent member of the American Medical Association, a delegate of the Ninth International Medical Congress, Washington, D. C., 1887,



and Vice-President of the New York County Medical Association which paved the way for five terms in the presidential office of this last body. To his current biography also belong the positions of consulting physician of the Old Marion Street Maternity Hospital as the successor of the late Dr. George T. Elliott, as well as trustee and consulting physician of the Northern Dispensary. To these may be added a twenty years' service as a surgeon of police, terminated only by the age-limit and a few years as a consulting physician of the St. Andrews Society, an honor over which there was generally much rivalry. Also need there be omitted the reference of the clergyman officiating at his funeral to "The mounting up of his earnest morals into piety" as demonstrated by his early identification with the church, which at his father's death merged into a promotion as a trustee and secretary of the Theological Seminary conducted under its auspices.

Reverting to his educational career Doctor McLeod received his bachelor's degree from the University of Pennsylvania of which Institution his maternal grandfather Samuel Brown Wylie, born in County Armagh, Ireland, and subsequently a Glasgow graduate was at that time the Professor of Ancient languages and literature. Continuing his studies he finally received his diploma in 1852 from the College of Physicians and Surgeons, N. Y., a member of the same class of that of his cousin and life-long intimate, the late Dr. Cornelius R. Agnew. Afterwards he went to Paris, where he received another degree from the Ecole de Medicine—the evidence of which only appeared after death among his papers, so averse was he to aught that bordered on affectation or display.

Thus well equipped he set his face against the mysteries of mayhap his forced pursuit, not entirely converted to all its teachings since the texture of his thoughts as may have been devined had been woven on a Scottish loom. Spartan too by instinct and training, he was as yet an observant student of the genteel comedy of life and one who serenely tested motives and persistenly sought after causes. What wonder that psychology was to him a happiness in which he worked on for the work's sake! Why should he not have reveled in the intricacy of medical jurisprudence the while enjoying its quaint distortion of facts and its perversion of logic? He might have loved the clatter of arms but hardly the trickling of blood. However, we are told that among his self-cherished honors were the vice-presidency and the repeated presidency of a Medico-legal Society, for there he enjoyed pitting his calm demeanor against the tumult of debate, and seldom missed an opportunity for displaying his sturdy fealty to what he believed to be the right. Perhaps his optimism redeemed him from unseen displays and gave a dignity to his gavel, but as an off-set his steadfast nerve, his sincerity and the

impressions of the moment, merging into intuition, may have more than contributed to a certain mastery of his environments.

A much better clinician than perhaps pathologist, Dr. McLeod's diagnoses were seldom awry, and at the very least his opinion was respected. Never grudgeful of advice to his medical brethren, he answered their calls, with alacrity at any self-sacrifice. Many, indeed, are the tales told by these confreres of his faith in the unity of law and his distrust of multiplied exceptions. Politically he might have been classed as a canny liberal with hesitations, but in his own profession he spoke authoritatively although so watchful was he of the wounded pride of others that the discomfited ranked him as just a lord more for show than use. To his ambition there never was a malicious inclination since all accorded him the tribute of using his powers so kindly, and not a few of his critics claimed that he betrayed, at least in science, a teutonic scepticism in reserve for more searching revisions. The after events however usually justified the mathematically precise weighings of his judgment.

Dr. McLeod had collected a valuable library on various topics and was an omnivorous reader with a most tenacious memory. Of course he was unjust to himself in attempting too much with margins of suggestive clues doomed to the ruin of procrastination and displacement. His was the erudition gained from monographs rather than from treatises—just the clue, nothing more of the knowledge where the ore might be found. His too was the type of the busy practitioner abounding in sketchy ideas, but altogether too practical to cajole with an emergency. Hence our friend may have had hesitations, but he never forfeited esteem or awakened antagonism. All knew that his achievements were not up to the level of his abilities, while they credited the fact that vigorous friction had conferred the brilliant polish. Less of bustle and more of work along continuous lines might have made him more conspicuous, but certainly not more beloved. There might have been more of the personal note with a quivering reminder of a long distance, but inasmuch as there was in its place only the quizical smile, he was denied the privileges of the hero who obliviously exploits his deeds by medals upon his bosom. He expected no reverence from his fellows and indeed offered no equivalent for its lack. His independence was too sturdy for ready capitulations, and so there were no mistakes between the identities of flattery and gratitude.

But what is left of this life of short stories, this song of a brave fight? Is not the answer as comprehensive as a catalogue? Abundant work, the usual but not too marked distrust of self, a few wayside pleasures, many shattered idols, uncounted defeats, a conscience void of offence, a slender purse and a saintlike resignation. And then a few monographs, a presidential address or two, sketchy

eulogies of the departed, reminiscences of childish though gorgeous delusions, the wand, the dissolving view and at last the echoing plaudits of a passing generation, that does not exactly kill its prophets, but merely enjoys the pathos of their demise.

Dr. McLeod in 1857 married Miss Sarah B. Irving, descended from the family of which Washington Irving was a member. She survives him along with two sons, Lincoln McLeod, a lawyer who was an infantry captain throughout the Spanish war and Dr. Johnston McLeod, who was associated with him in practice.

BIOGRAPHICAL SKETCH OF DR. JOSEPH G. WALLACH.

By E. H. Squibb, M. D., from facts furnished by Mrs. Wallach.

Joseph Gabriel Wallach, the second son of Samson and Adelheid Wallach, was born in Hartford, Conn., on September 7, 1855. His parents moved to New York city while he was still a child. His early education was obtained at the Columbia Grammar School from which he went directly to the Bellevue Hospital Medical College, and graduated from the latter in the spring of 1877. He went at once to the University of Leipsic and afterwards to Paris and Vienna to complete his medical education. He spent a somewhat lengthy time at the Gebär Haus in Prague where he acquired considerable skill in obstetrical work for which he became prominently known in his subsequent professional career. He returned to New York city and entered practice there. He again visited Europe in 1878 and while residing in Cologne, Germany, for a short time, he demonstrated his surgical skill to great advantage to the local physicians, emphasizing the fact that a physician from the United States could excel in his particular branch.

It is claimed that he was the first surgeon to go on record in Germany as having performed successfully an operation for the cure of club-foot.

He settled down to a general practice in New York city in 1880, but from his previous skill in gynecological work, his practice was soon restricted to the diseases of women and children.

His health did not remain good very long and he was forced to retire from practice in 1898. He took up his residence in Georgia and varied it by camp life in the Adirondacks, in the vain attempt to regain his health. He, however, died in New York city on November 21, 1899, at the age of 44, leaving a widow, a daughter and a son.

The funeral services were held at the West End Synagogue of which he was a member. The attendance at these services of both rich and poor gave an impressive and speaking evidence of his influence and the good he accomplished during his professional life.

Those who knew him best speak of his simple integrity, his tender sympathy and unswerving faithfulness to duty which earned him the esteem, love and lasting gratitude of all who came in contact with him. He was untiring in his efforts to alleviate the distress of the poor and offered his skill in their behalf.

He was also active in the communal charities, contributing both money and personal service.

For many years he was Gynecologist to the Outdoor Department of the Mount Sinai Hospital. He was a director of the Educational Alliance and Consulting Physician to the Hebrew Sheltering Guardian Orphan Asylum up to the time of his death.

MEMOIR OF DR. T. J. McGILLICUDDY.

By M. C. O'Brien, M. D., of New York County.

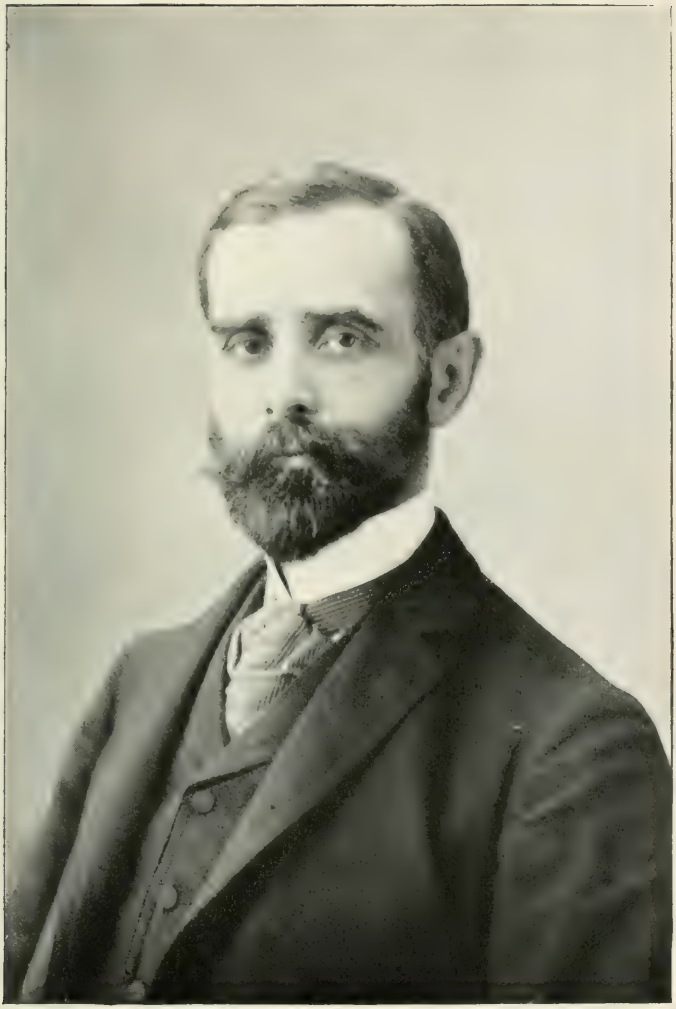
Dr. Timothy J. McGillicuddy was born in Lewiston, Maine, June 7, 1857, and died in New York city, January 16, 1899.—His last illness like his life and disposition was short, sharp and decisive.

In no experience do we feel the power that dumbs the senses and renders vocal and written expression more difficult than the sudden going out of the light of life, like a candle blown at the casement, in the premature death of one's intimate friend, and when this person is the family physician in an ever widening circle, with all the clustering memories that each patient cherishes, the always welcome visitor, the thoughtful counsellor, the devoted friend and intimate of the oldest and youngest of the household. When such a guide abruptly and forever breaks the ties that bind them in a common union, difficult indeed is the task of comprehending the purport and meaning of the Divine degree and useless the effort to sound its wisdom.

"Mid thorns of judgment, mercies bloom in sweet relief."

The profession may be prolific in men of greater attainments, the fruits of lengthened years, but it is most fortunate if among its younger members it had a more zealous student, who burned the midnight oil—not so much for personal gain as to satisfy a thirst for knowledge, that would better enable him to convey to others of the profession by spoken or written words the ideas of theory and practice which he believed to be progressive and helpful to mankind. He devoted the early years of his practice chiefly to obstetrics and the diseases of women, in dispensary, hospital and private practice daily was he teaching the poor and ignorant and the rich and presumptious how to live as the creator wished mankind to live, viz.: In cleanliness. He would be living to-day had he taken more thought of himself, but his nature was imperious, early and late he studied and devised nor could advice or persuasion turn him from the path of what he believed to be his highest duty.

His ambition was to be a teacher of preventive medicine and two years ago to-day on this rostrum, he read his paper on "medical or tissue asepsis" wherein he enunciated the motto "cleanse and strengthen" and gave expression to to the principles, as practiced in surgical asepsis, that medical or tissue asepsis or "blood washing" was a demonstrable and practical fact, and amid the gloom of grief and personal loss, shines clear and bright the hope that he labored not in vain. That as this generation walks the pathways



the fathers wisely planned, the industrious students and plodders of our profession may find their course lightened and brightened by such impetuous and indomitable spirits as his who has gone before us.

Natures of men vary with their indivilual gifts, and while many turn aside the pointing finger of manifest destiny, thrice glorious are they who in their strenuous manhood accept the decree and fight and toil with the strength of their whole being, blind to the derision and deaf to the taunts and carping jest of those who, void of enthusiasm and unconscious of heroic impulse, loiter through life and do little but impede the car of progress.

We make no claim that Dr. McGillicuddy was a brilliant exception but rather rejoice that he was of that glorious company of enthusiasts who blending knowledge with growth as the fruit but ripens when mature, dared to give utterance anywhere and everywhere of the vision he perceived of the ideal spirit of progression at whose feet we worship, and whose favoring smile is the reward of her faithful devotees.

When word reached us through the public and medical press of the meeting held in London, presided over by the Prince-of-Wales "to consider the rapidly increasing spread of tuberculosis," our late member was one of the first to communicate with the English public through a popular London Journal and furnish it for publication his articles on "Seed and soil of tuberculosis, its treatment by medical asepsis." assuring the editor that America was aroused by the importance of the subject and was making strenuous efforts to control bovine and human tuberculosis.

This effort did not imply a carping spirit, satisfied with his own narrow limitations nor the supine man caring only for his own prosperity, but indicates the broad, sanguine spirit that filled him, the largeness of his soul and the tender sensibility to the crying need of mankind which knows not geographical limitations nor designs to stand apart whenever humanity suffers. It was in keeping with the predominant trait of his character—the utter simplicity of the man. When his book on "Functional Nervous Diseases of Women" was reviewed by the London Lancet the editor wrote, among commendable phrases, "we are impressed by the simplicity and kindly spirit of the author."

In his writings, in his speech and manner, before an audience or beside the bed of the sick this one predominant charateristic was always in evidence.

The world to-day may possess scholars of greater profundity practitioners of larger breath, writers of greater incision, and students with a higher and clearer vision, but the profession never possessed a loyal and faithful son, who gave all that study and nature revealed to him simply and lovingly to its highest service.

MEMOIR OF LYMAN BARTON, M. D.

By E. D. Ferguson, M. D., of Rensselaer County.

The death of one who has stood for a long life before the community as an exponent of all that is best in our civilization is a proper reason for us to pause to give a word of tribute of honor, and to gather if possible a lesson in the true path of life.

On Sunday, October 22, 1899, the body of Dr. Lyman Barton was borne from his former home in Willsborough to the near by burial ground, and in the presence of a very large number of those who had been his patients, his neighbors, and his friends, was committed to the earth.

The life which was closed on October 20, 1899, began at Hebron, N. Y., on September 19, 1812, as the son of Simon Barton and his wife Olive Cary. Through his father he was the sixth generation in direct descent from Samuel Barton who was one of the witnesses in the trial of Elizabeth Proctor for Witchcraft in Salem, Mass., in March, 1692. The life and line of thought of Dr. Barton represented all that was noble and true in the character of his sturdy New England Ancestors, with the addition of a deeper insight into the problems of life, and a broader sense of the brotherhood of mankind.

He graduated as Doctor of Medicine from Dartmouth College in 1839, and his scholarship was further attested by the honorary degree of Master of Arts which was conferred by the University of Vermont in 1869.

Soon after graduating from Dartmouth he located in Willsborough, Essex county, N. Y., where he continued in the practice of his profession until 1891, when the infirmities due to age and to the more than a half century of arduous professional duty brought about his retirement.

On December 31, 1840, he married Minerva Akin, the daughter of Major Abraham Akin, who served as Captain in the 37th Regiment of the New York Militia at the battle of Plattsburgh in the war of 1812.

He was connected with the Congregational church of Willsborough, and was in every sense a worthy and useful member thereof, though he never obtruded his religious beliefs on the attention of members of other religious denominations. In 1871 he became a life member of the American Bible Society, and in the whole course of his life had a deep interest in the Scriptures, an interest properly

becoming even greater when he was obliged to relinquish the active practice of his profession.

He was several times made president of the Essex County Medical Society, and was elected a permanent member of the Medical Society of the State of New York in 1867, and continued in active membership therein until February 6, 1884, when he withdrew and became one of the founders of the New York State Medical Association.

He was elected several times as supervisor of the town of Willsborough, though politically not affiliated with the majority of the voters of the township, and was regarded as the safe adviser for all those in the community who were in trouble in mind, body, or estate.

His wife died August 4, 1898, and he left behind him five children—Lyman G. Barton, M. D., of Willsborough, N. Y.; Mrs. William Keefe of Burlington, Vt.; Mrs. B. J. Chatterton of Willsborough, N. Y.; Mrs. George A. Perry of New York city and Mrs. Kenneth Laurie of Denver, Colorado.

It was the privilege of the writer to be intimately associated with Dr. Barton during several years. Their fields of professional work were contiguous, and in many instances responsibility was shared between them. In that way and through the conversations during long rides together through that portion of the Adirondack region, both by day and by night, his true manhood and thorough scholarship were learned and appreciated. It was our custom on the occasion of these rides to discuss some of the many great problems of the past, the present, and the future, as affecting humanity. The writer recalls very clearly one occasion when they were making by night the ride from Elizabethtown to Willsborough, and in the eagerness born of the idea of the possession of some novelty, launched into the themes suggested by a recent perusal of Tait and Stewarts "Unseen Universe." Dr. Barton's life of study and thought was equal to the separation of the "law of continuity" from its wrongful application in any effort to explain all that was spiritual on the basis of material experience.

In every way he filled the position of "first citizen" in his community, one to whom all could look for advice and example, a position more useful and honorable than can come from any official station, or the possession of great wealth.

To have known him well was one of the great privileges of my life, and the memory of our association is now one of my greatest pleasures.

BIOGRAPHICAL SKETCH OF JAMES FEELY, M. D.

By Dr. Adolph Wieber.

Dr. James Feely was born in London, England, in 1844, and when but a year old was brought to this country by his parents, who a year after their arrival took up their residence in the fifteenth ward, Williamsburgh, where Dr. Feely had lived ever since.

Dr. Feely's father was borne in Ireland and followed the occupation of an engraver and die sinker, and was rated among the most expert of his craftsmen in the country. He died a number of years ago. Mrs. Feely, mother of Dr. Feely, who is still living, claims England as the land of her nativity.

Dr. Feely's early education was had at Franklin Hall Academy, Williamsburgh, and Brooklyn Institute. Later a course at the Brooklyn Polytechnic was completed and in the fall of 1861 he entered the Medical Department of the University of New York. While at college Dr. Feely attained the distinction of being appointed Demonstrator of Anatomy, the chair of Anatomy being at that time occupied by Prof. Van Buren. After graduation Dr. Feely continued at the college as Demonstrator of Anatomy for several years and did not take up the practice of medicine in Williamsburgh until 1865.

Dr. Feely's predilections turned strongly to surgery, and it was at this time that he met and became a close friend of the late Dr. Joseph Creamer, who was an eminent surgeon of that section and who died in 1893.

The only public office held by Dr. Feely was that of police surgeon which he filled for several years late in the seventies. He was not conspicuously active in politics although at all times willing to cast the weight of his influence for the aid of his friends.

In later years, when through natural aptitude for his calling and persistent application born of a determination to excel, he attained eminence as a surgeon. His conduct continued to be marked by modesty, dislike of ostentation and great courage withal. As a surgeon it was perhaps his superior capacity as a diagnostician which chiefly distinguished Dr. Feely.

He was connected with St. Catharine's Hospital for over eighteen years and at the time of his death was one of the attending surgeons, being associated with Dr. Peter Hughes.

His practice was one of the most extensive in the eastern district.

Dr. Feely was one of the founders of the Brooklyn Surgical Society; a member of the Physicians' Mutual Aid Association; the New York State Medical Association; the Kings County Medical Association; the Hanover Club and of the Alliance Council No. 703, Royal Arcanum.

Dr. Feely died suddenly on August 30, 1899, from an attack of Angina Pectoris. He is survived by his mother and son W. Feely, aged 19 years; his wife having died several years ago.

BIOGRAPHICAL SKETCH OF NATHANIEL WILSON LEIGHTON, M. D.

By Dr. N. L. North, Jr.

Dr. Nathaniel Wilson Leighton was born of good New England stock at Falmouth, Maine, on June 13, 1833.

As a boy he worked on the farm and attended the district school and later was a student at the academies of South Paris and North Bridgton of his native state.

In 1854 he started the study of medicine and about three years later received his degree as Doctor of Medicine from Bowdoin College, continuing his studies at Dartmouth and the New York Medical College, being awarded a degree from the latter institution in 1858.

Dr. Leighton filled the position of prosector and demonstrator for Professor Peaslee and David S. Conant, M. D., 1857-58; was physician and surgeon in Kings County Hospital, 1858-59; physician and surgeon, Eastern District Dispensary (Brooklyn), 1859-61.

At the "breaking out" of the Civil War Dr. Leighton was prompt to offer his services to the Government, and in 1861 was commissioned assistant surgeon of the 72d Regiment (New York.) Volunteers, rapidly rising to the rank of surgeon. He saw much active service in the commands of Generals McClellan, Pope and Sheridan in Virginia and General Banks in Louisiana. In 1867 Dr. Leighton for faithful and meritorious service during the Civil War was honored with the commission of Lieutenant-Colonel. After the close of the war the doctor returned to Brooklyn and was United States Pension Examiner from 1866-1885.

Dr. Leighton was an ex-member of the Medical Society of the county of Kings; one of the original members of the Medical Association of Kings county and vice-president of the same 1894-1895; member of the New York State Medical Association; American Medical Association; New York Physicians' Mutual Aid Association; Ninth International Medical Congress; First Pan-American Medical Congress, and a benefactor of the New York Society for the Relief of Widows and Orphans of Medical Men.

In June, 1861, Dr. Leighton married Miss Mary E. Purinton of Portland, Maine. Mrs. Leighton died May, 1882, leaving three children. Several years later the doctor was again joined in wedlock to Miss Helen M. Hudson, of this city, who bore him one child.

Never in very robust health she (the mother) passed away about two years ago.

Dr. Leighton was a member of the G. A. R., Brooklyn Institute of Arts and Sciences and the Bedford Avenue Baptist Church.

His final illness was of short duration, his death occurring on August 12, 1899 (age 66 years). The cause of death was septic peritonitis following the rupture of an old abscess caused by the shock of a fall owing to the breaking down of a hammock in which the doctor was sitting.

In the death of Dr. Leighton the medical profession has lost a painstaking and ardent fellow-worker; the nation a brave and faithful soldier; the church a consistant christian member and his family a kind and devoted parent.

OBITUARY OF DR. GEORGE W. BAKER.

By N. W. Leighton, M. D.

George W. Baker was born in Richfield Springs, N. Y., May 20, 1837, and died at his residence, 540 Bedford avenue, Brooklyn, December 5, 1898. He was in comparatively good health till within six days of his death, when he was stricken with pneumonia. He was attended by his son Frank who resided with him and was his associate in practice, and by Dr. N. L. North, Sr., as his constant counsel; Dr. Janeway also gave his counsel.

Dr. Baker's early education was in the Seminary at Richfield Springs and his collegiate course at Union College, Schenectady, where he received the degrees of A. B. and A. M. His degree of M. D. was obtained from the College of Physicians and Surgeons of New York city in 1864, after which he entered the United States Army service performing duty in several hospitals at Washington, D. C.

In 1865 he began private practice in Brooklyn, locating in the Thirteenth Ward. In 1866 he was identified with the Eastern District Dispensary and with the Metropolitan Board of Health. He was one of the founders of the New York State Medical Association and of the Kings County Medical Association, and a member of the Ninth International Medical Congress held at Washington, D. C., in 1887. He gained prominence early in his professional career and was soon recognized as a busy practitioner among his compeers. Like all true physicians he rendered much gratuitous service to the improvident and like most of them often received unkindness and injury in return.

He was a member of the Hanover Club and was physician to a delegation which visited the Nashville Exposition in 1897.

His two sons, William H. and Dr. Frank R., survive him, his wife having died from pneumonia March 28, 1893.

A BIOGRAPHICAL SKETCH OF A. HÜHNE, M. D.

Dr. Augustus Hühne was borne in Celle, a town situated on the river Aller in the province of Hanover, Prussia, on February 18, 1821. He was the son of a civil engineer. His general education was received in Germany, after which he prefected himself in the study of pharmacy and came to this country in June 1852. He soon established two apothecary stores in New York city, both of which he carried on for a number of years, and took up the study of medicine. He graduated from the New York Medical College (now extinct) in 1858, gave up business in New York city and moved to Rondout, Ulster county, N. Y., where he purchased a drug store on the corner of Abeel and Division streets. This building was torn down for improvements in 1860 when he removed to his late residence No. 68 Abeel street. He died of cerebral apoplexy on Thursday, December 2nd, 1897, after an unconscious period of only about 24 hours.

He was twice married. His first wife was Miss Wilhelmina Fricke, a native of Germany who had come to this country not long before their marriage. Out of their six children only one is now living, Dr. Frederic Hühne of Kingston, a Fellow of this Association.

On February 12, 1865, he married his second wife, Catharine Fox. She and their four children survive him. The children are Dr. J. A. Hühne, a veterinary surgeon, Kathryn E. Hühne, Julius J. Hühne who reside in New York city, and Elizabeth P. Hühne of Kingston.

He was one of the Founders of our New York State Medical Association and was, at his death, on the Retired List. He was also a member of the Ulster County Medical Society and of the Rondout Lodge, F. & A. M.

He was one of the oldest physicians in this part of the State and was frequently consulted by prominent physicians even from New York. He was social among his medical brethren and in the community at large, being honored in both circles.

He did considerable charitable work not only professionally but in a general way throughout the thirty-nine years of his life in Ulster county.

He was so well-known and had so many friends throughout his neighborhood that upon urgent request his body was permitted to "lie in state" at his residence on Saturday afternoon, December 4th, for two hours before the private interment.

BIOGRAPHICAL SKETCH OF X. T. BATES, M. D.

By E. H. Squibb, M. D.

Dr. Xyris Turner Bates was born at Lebanon Springs, Columbia county, N. Y., on August 11, 1839. He graduated from Yale College in 1862, after which he taught at the Rectory School, Hamden, Conn., for three years, when he began the study of medicine. He graduated in medicine at the Albany Medical College in 1867, receiving the second honor by being appointel essayist.

He visited Europe professionally in 1871 and was engaged for some months in the Rotunda Hospital in Dublin, Ireland, from which he received a degree. He then travelled for study and professional observation among the schools and hospitals of London, Edinburgh, Prague and Berlin. On returning to this country he located in his native town where he remained some twenty years building up a large and increasing practice. He was married on September 16, 1875, to Miss Emily Warren of Bangall, Dutchess county, N. Y.

He became editor of the "Journal of Materia Medica," a monthly periodical which had been carried on in earlier years by his father, Dr. Joseph Bates, who died in 1879. Overpressure of work and delining health led him after twenty years of actual general practice to reluctantly abandon his career in his native locality and to remove to Poughkeepsie in the year 1890 in order that he might confine himself chiefly to office work. This limitation, however, was not sufficient for his waning strength, therefore in 1894 he began spending his winters South, coming North with his family in the summer months or else stopping in the mountains at Glade Spring, Virginia. During the last five years he confined himself almost wholly to consultation practice and literary work.

He was a reticent man of noble character and fine attainments, greatly beloved and honored. His christian manhood and gentlemanly bearing not less than his professional aptitude insured him in every place general and sincere esteem. He never regained health and his suffering steadily increased, chiefly due to a serious heart affection. He died suddenly in Poughkeepsie at 10 p. m. on January 2nd, 1899, from an attack of angina pectoris. His wife and son, Joseph Warren Bates, survive him.

Every one of Dr. Bates' early professional friends had passed away before him, one by one, and his illness largely prevented him

from making new acquaintances. Among his old associates were prominent men of Philadelphia, New York, Albany and Pittsfield, Mass. He had a strong natural love for his profession and believed that in it he was serving his Creator and mankind. He was a Mason of high standing and belonged to the Hudson (N. Y.) Commandery.

MEMOIR OF WILLIAM CRAMER, M. D.

By Irving Deyo LeRoy, M. D., of Dutchess County.

Dr. William Cramer, one of the Founders of the New York State Medical Association, was born in Poughkeepsie, N. Y., on June 1st, 1860.

He was graduated from Rutgers College, New Brunswick, N. J., A. B. in 1879 and received the degree of A. M. from the same institution in 1882. Immediately following graduation from the College of Physicians and Surgeons of New York City in 1883, he began the practice of medicine in Poughkeepsie, N. Y., where he remained until his death which occurred April 4th, 1899, after an illness of less than a week, due to intestinal obstruction and perforation. He never married. In his death the medical profession loses a valued member and Poughkeepsie a good citizen.

He was a member of the Dutchess County Medical Society of which he was Secretary from 1884-91; of the Delta Phi Society of New York; of the Royal Society of Good Fellows and of the Order of Chosen Friends. He was city physician of Poughkeepsie from 1889-91 and visiting physician and surgeon to the City Almshouse for same period. He was a loyal friend, modest even to the point of diffidence and a gentleman in the highest sense of the word.

I add a tribue from the pen of another.

A TRIBUTE TO DR. CRAMER.

The passing away of Dr. William Cramer is a distinct loss to the Poughpeeksie Orphan House and Home for the Friendless. Although but a short time physician at this institution, his faithful, conscientious devotion to all within the Home, together with his genuine interest in its welfare, will be long remembered.

Of a quiet retiring nature, he at once inspired confidence, and his skillful ministrations to the sick in mind and body brought a ready relief. Called away to the Higher Life, while yet in his early manhood, his memory will remain with us, for "I was sick and ye visited me."

The Board of Managers desire to record this simple tribute, and tender also to the family of Dr. Cramer their sincere sympathy.

E. G. WHEELER,
Recording Secretary.

REPORTS OF THE DISTRICT BRANCHES.

SECOND DISTRICT BRANCH.

The fifteenth annual meeting of the Second District Branch of the New York State Medical Association was held in Hudson, on the twenty-ninth day of June, 1899.

The meeting was opened by the president, Dr. D. C. Moriarta. Twenty-eight members present.

The address of welcome was made by Dr. C. E. Fritts of Hudson, after which the president's address was delivered.

"Fracture of the Patella. Reports of cases," was the title of a paper by Dr. M. D. Dickinson, which was discussed by Drs. E. D. Feerguson, H. L. Woodworth, F. H. Wiggin, W. W. Seymour and D. C. Moriarta.

An interesting and well-prepared paper on "Diagnosis and Treatment of Displaced Pelvic Organs," was read by Dr. F. H. Wiggin of New York city. Discussed by Drs. E. D. Ferguson, W. W. Seymour, D. C. Moriarta.

"Some Considerations Relative to the Origin of Cancer. Two Cases of Colloid Cancer of the Abdomen" was the title of an interesting paper by Dr. E. D. Ferguson.

Dr. H. C. Gordinier's paper on "Pathology of Paralysis Agitans; Report of a Case with Autopsy" was intensely interesting. Remarks by Dr. E. D. Ferguson.

An interesting paper "On the Prsent Position of Gall-stone Surgery" was read by Dr. W. W. Seymour.

A paper on "Cretinoid Disease and its Treatment with Thyroid Extract, a case" was read by Dr. J. T. Wheeler. Discussed by Dr. H. C. Gordinier.

On motion of Dr. E. D. Ferguson, the present officers were elected to serve for another year.

The sixteenth annual meeting will be held in Schenectady, on the last Thursday in June, 1900.

A vote of thanks was given to the Association members of Hudson and vicinity for the royal manner in which the Association was entertained through their Committee of Arrangement.

After adjournment an enjoyable carriage ride was taken in the vicinity of Hudson.

DR. JOS. E. BAYNES,
Secretary.

THIRD DISTRICT BRANCH.

The fifteenth annual meeting of the Third District Branch of the New York State Medical Association was held in the rooms of the Academy of Medicine, Elmira, N. Y., Thursday, June 1, 1899.

The meeting was called to order promptly at 10 a. m. by the president, Dr. F. D. Reese of Cortland. The minutes of the previous meeting were read and approved.

A motion was carried that each member in attendance be assessed $1 for the expenses of the meeting.

The following members and visitors registered during the meeting. The rooms were filled during the whole session, several failing to register:

E. D. Ferguson, Troy, N. Y.
F. Ferguson, New York City.
F. D. Reese, Cortland.
F. W. Higgins, Cortland.
H. S. Braman, Homer.
Geo. M. Cady, Nichols.
H. C. Hendrick, McGraw.
LeRoy D. Farnham, Binghamton.
N. H. Soble, Elmira.
O. J. Bowman, Horseheads.
R. D. Eastman, Berkshire.
Geo. M. Case, Elmira.
John H. French, Brooklyn.
J. R. Schoonmaker, Sayre, Pa.
Frank Keirigam, Scipio.
J. M. Farrington, Binghamton.
F. H. Wiggin, New York.
H. D. Didama, Syracuse.
J. D. Bryant, New York City.
C. L. Stiles, Owego.
J. C. Fisher, Elmira.
F. W. Ross, Elmira.
D. H. Reardon, Elmira.
T. A. Wales, Elmira.
E. A. Didama, Cortland.
L. S. Bartholomew, Reading Center.
W. L. Ayer, Owego.
J. H. Brewster, Elmira.

W. L. Ayers, Owego.
C. W. M. Brown, Elmira.
C. N. Hammond, Elmira Heights.
S. M. Seafuse, Gillette, Pa.
W. H. Fishar, Elmira.
Jonas Jacobs, Elmira.
F. Horace S. Ritter, Elmira.
S. J. Brooks, Norwich.
J. W. Stewart, Big Flats.
Wm. E. Park, Big Flats.
Sherman Voorhees, Elmira.
Anna M. Stuart, Elmira.
Nathaniel Loor, Elmira.
Elizabeth M. Hooper, Elmira.
T. A. Dundas, Elmira.
J. A. Westlake, Brewsport.
W. S. Cobb, Corning.
E. J. Carpenter, Corning.
H. M. Browne, Corning.
R. R. Chilson, Elmira.
C. G. R. Jennings, Elmira.
Herbert W. Fudge, Elmira.
H. S. Gillette, Sorona.
W. E. Colegrove, Horseheads.
A. A. Aldrich, Addison.
G. D. Smith, Elmira.

The following nominating committee was elected:

L. D. Farnham,
Frank Kenyon,
J. C. Fisher,
H. C. Hendrick,
L. J. Brooks,
H. D. Didama,
W. L. Ayer,
C. P. Biggs.

Their report was presented at the beginning of the afternoon session and adopted.

The next place of meeting to be at Binghamton. The executive committee to remain unchanged.

Dr. L. H. Hills was recommended for president.

Drs. Farrington and Farnham both declined to act as secretary; it was left with the committee to fill the vacancy in that office.

Dr. E. D. Ferguson and Dr. F. W. Ross were appointed a committee on registration.

The following resolutions were adopted, copying those recently passed by Pennsylvania State Medical Society:

Resolved, That it is the opinion of the Third District Branch of the New York State Medical Association that opticians are not qualified by their training nor are they legally qualified, to perform the work of the oculist, and they should not be the consultants of regular physicians.

Further it is resolved, That it is requested that all physicians call their brother physicians in consultation, thus discountenancing the growing pretentions and assurances of the optician and his brother, the graduate optician, or as he is beginning to call himself now, the "ophthalmotrician."

The president read an address upon the "Subject of Diagnosis."

Dr. F. W. Ross reported for the entertainment committee.

A motion was carried that the society request each district to make a nomination for vice-president from its own membership.

A motion was then carried that the present nominating committee include in their report a nomination for vice-president to be approved of by the present society.

Dr. J. M. Farrington of Binghamton, read a paper upon "Nature and Art in the Cure of Disease," pleading for a recognition of nature's ability to cure all acute diseases.

Dr. H. S. Braman of Homer, read a paper entitled "Pneumonia in Children," giving especially attention to diagnosis and treatment.

Dr. F. A. Wales of Elmira, read a carefully prepared paper upon "The Medical Expert Witness and his Future." The discussion of this paper was opened by Dr. F. Ferguson of New York city, who included in his remarks the substance of his assigned subject. "The Value of Pathological Investigations in Medico-legal Examinations." He gave several cases in which a carefully performed post-mortem examination had proved the guilt or innocence of the accused. The discussion of the general subject was continued by Dr. E. D. Ferguson of Troy, Dr. L. H. Hills, Dr. F. W. Higgins, Dr. F. H. Ross, Dr. H. D. Didama and Dr. T. A. Dundas

Dr. E. D. Ferguson of Troy, read a fine paper on "Some Lessons from Colloid Cancer in the Abdomen." He included a description of a marked case in his own practice.

A recess of an hour was taken for dinner at the hotel Rothburn.

Dr. J. D. Bryant and Dr. F. Ferguson begun the afternoon session with a discussion of Dr. E. D. Ferguson's paper.

Dr. F. H. Wiggin announced a preliminary programme of the meeting in New York city inviting a general attendance.

Dr. R. Aberdein of Syracuse, paper, "A Case of Extra-Uterine Gestation," and "A Case of Cæsarian Section," was read by title.

Telegrams of regret from Doctors J. G. Orton and U. H. Brown were read.

A discussion on Visceral Displacements was given by papers on four aspects of the condition.

"Displacements of the Spleen," By Dr. F. W. Higgins of Cortland.

"Glenard's Disease," by Dr. L. D. Farnham of Binghamton.

"Displacements of the Pelvic Organs," by Dr. F. H. Wiggin of New York city.

"Floating Kidney," by Dr. Joseph D. Bryant of New York city.

Dr. F. W. Ross, of Elmira, read a paper entitled "Some Observations in the Care and Treatment of Disease in the American and Cuban Hospitals." It explained some of the difficulties which were met with in the field, and showed how the service had been unjustly criticised. The outdoor treatment of acute diseases were very successful. The paper was discussed by Dr. H. C. Hendrick and Dr. H. S. Ritter.

Dr. H. D. Didama, of Syracuse, read a very entertaining paper entitled "Personal Therapeutic Observations."

Dr. John C. Fisher gave a report of a "Case of Myxoedema."

A vote of thanks was moved by Dr. H. C. Hendrick and carried expressing the thanks of the Association to the Elmira Academy of Medicine for the use of their very pleasant rooms.

The meeting adjourned at 5 p. m.

F. W. HIGGINS.
Secretary.

FOURTH DISTRICT BRANCH.

The fifteenth annual meeting of the Fourth District Branch was held at the Genesee Valley Club, Rochester, May 19th, 1899.

President Wm. M. Bemus was unable to be present on account of illness.

Upon motion of Dr. Frederick, Dr. E. M. Moore was elected President pro tem.

The Secretary read the minutes of the last annual meeting.

The minutes were approved.

The Treasurer read a report of the expenses incidental to the meeting.

The report of the Treasurer was approved.

Upon motion of Dr. S. S. Green an assessment of one dollar was levied upon each member of the Branch.

The address of President Wm. M. Bemus on "A Few Hints to Volunteer Medical Officers," was read by Dr. Morris N. Bemus.

The subjet was disussed by Dr. M. W. Townsend.

"Acute Articular Rheumatism."

(a) Etology. (b) Pathology. (c) Treatment. By A. A. Young, M. D.

Dr. Young's paper was discussed by Dr. E. M. Moore, Jr., and Dr. S. S. Green.

"Placenta Praevia," by S. S. Green, M. D.

Discussed by Dr. C. C. Frederick, Dr. M. W. Townsend, Dr. Darwin Colvin, Dr. M. N. Bemus and Dr. E. M. Moore.

"Sensation Experienced while being Intubated," by George F. Cott, M. D.

Also presentation of apparatus for compressing air to be used for spraying.

"Intestino-Vaginal Fistula," by C. C. Frederick, M. D.

The President announced that during intermission the members present from the different counties should nominate members for the Executive Committee.

"Malignant Diseases of the Uterus, its Diagnosis and Treatment," by Frederick Holme Wiggin of New York.

Discussed by Dr. S. S. Green and C. C. Frederick.

The following Executive Committee was then elected for the ensuing year.

B. C. Wakely, M. D., Allegany County.
S. J. Mudge, M. D., Cattaraugus County.
T. D. Strong, M. D., Chautauqua County.

DeLancey Rochester, M. D., Erie County.
Frank L. Stone, M. D., Genesee County.
R. J. Menzie, M. D., Livingston County.
E. M. Moore, Jr., M. D., Monroe County.
W. Q. Huggins, M. D., Niagara County.
F. R. Bently, M. D., Ontario County.
J. H. Taylor, M. D., Orleans County.
C. S. Parkhill, M. D., Steuben County.
Darwin Colvin, M. D., Wayne County.
A. G. Ellinwood, M. D., Wyoming County.
Wm. Oliver, M. D., Yates County.

A paper on "Hyperchlorhydria" was next read by Dr. A. S. Benedict.

Dr. G. W. Goler presented and illustrated with a chart, a paper on "The Suppression of Tuberculosis."

Adjourned.

WM. M. BEMUS,
President.
WM. H. THORNTON,
Secretary.

FIFTH DISTRICT BRANCH.

A called meeting of the Executive Committee was held at 315 Washington street, Brooklyn, on Tuesday, May 23rd, 1899.

The President, Dr. J. D. Bryant, called the meeting to order at 10.25 a. m.

Present: Drs. Bryant, Denison, Waterworth, Van Hoevenberg and Squibb.

The Secretary read the minutes of the last meeting.

A note from Dr. E. F. Brush was read expressing his regrets at being absent from the meeting.

The report of the committee of arrangements (elected by cirucular vote) was then presented and ordered on file.

The President next selected Dr. Van Hoevenberg to act with the Secretary and one other Fellow from the general meeting, to be appointed later, as Registration Committee.

The Secretary announced officially the death during the past year of the following seven Fellows of this district:

Dr. G. W. Baker,
Dr. Wm. Cramer,
Dr. A. Hühne,
Dr. T. J. McGillicuddy,
Dr. J. A. Roth,
Dr. J. R. Vanderveer,
Dr. C. S. Ward.

Of these Drs. Baker, Cramer, Hühne and Ward were founders of the State Association.

The following minute was offered, duly seconded and carried:

It is with sorrow that we have to note among the other losses from our fellowship during the past year, the very recent death of Dr. William Cramer of Dutchess county, a member of this Branch Executive Committee and one of the Founders of our Association.

We therefore desire to record on our minutes not only an expression of our very decided loss of his services, but our high appreciation of his sterling qualities as a fellow practitioner and citizen of the younger generation.

The Treasurer then read his itemized accounts and submitted the following statement, his cash book and vouchers for auditing:

TREASURER'S ANNUAL STATEMENT, MAY 24, 1898 TO MAY 23, 1899.

Fifth District Branch New York State Medical Association with E. H. Squibb, Treasurer.

DR.

To balance cash as per statement May 24, 1898..	$226 08	
Assessments collected	19 00	
Interest	79 62	
		$324 70

CR.

By rent of meeting rooms for 14th annual meeting	$10 00	
Catering for 14th annual meeting.....	50 00	
Postage	13 20	
Printing	3 75	
Balance on hand	247 75	
		$324 70

PERMANENT FUND ACCOUNT.

DR.

To total amount of fund as per statement May 24, 1898	$1,420 00	
Contributions to fund to date.....	40 00	
		$1,460 00

CR.

By investment in railroad bond, 5 per cent. interest	$830 00	
Balance on hand at interest.....	630 00	
		$1,460 00

The President appointed Dr. Denison to audit the accounts.

The following delegates from the Kings County Medical Association were expected to be present:

Dr. H. A. Alderton,
Dr. C. P. Gildersleeve,
Dr. John Griffin,
Dr. E. S. Hodgskin,
Dr. B. B. Mosher,
Dr. J. J. O'Connell,
Dr. J. W. Parrish,
Dr. Edwin Reynolds,
Dr. H. C. Reynolds,
Dr. H. M. Smith,
Dr. D. W. Waugh,
Dr. M. G. White,
Dr. J. S. Wood.

It was moved, seconded and carried that a hearty welcome be extended to not only these delegates but the invited guests expected, and full privileges of the floor be granted.

After consideration it was duly resolved to continue the assessment of previous years—$1.00—for 1899 on all those Fellows of the Branch who have not joined the permanent fund. The motion was

put and carried that, in accordance with previous custom, the nineteen Fellows who joined the State Association since the last meeting be exempt from assessment for 1899.

Dr. Denison, as Auditing Committee, here reported that he had found the Treasurer's accounts in acccord with the vouchers and statement submitted. This report was duly accepted by the Committee.

The annual report of the Executive Committee to the general meeting based on the above minutes was read and accepted.

The Secretary then rehearsed the business of the meeting which was approved.

Adjourned at 10.45 a. m.

E. H. SQUIBB,
Secretary.

The fifteenth annual meeting of the Branch was held at 315 Washington street, Brooklyn, on Tuesday, May 23rd, 1899.

The Morning Session was called to order by the President, Dr. J. D. Bryant, at 11.40 a. m.

The regular order of business was taken up at once by the Secretary reading the minutes of the last meeting which were approved.

The President then asked Dr. N. W. Leighton to act with Dr. H. Van Hoevenberg and the Secretary as Registration Committee for this meeting.

The report of the Committee of Arrangements was next read, and on motion placed on file.

REPORT OF THE COMMITTEE OF ARRANGEMENTS FOR THE ANNUAL MEETING 1899.

In welcoming the Branch to Brooklyn for this Fifteenth Annual Meeting, your Committee desire to express their satisfaction in the selection by the President of such an interesting and timely topic for discussion as Malignant Disease, and feel confident that the whole ground will be well-covered by those who have consented to take a prominent part. It is hoped that the efforts of your Committee in the arrangement of the minor details for this meeting will meet with the approval of all who attend.

Respectfully submitted,
Chairman: J. D. RUSHMORE, M. D.
W. H. BIGGAM, M. D.
N. W. LEIGHTON, M. D.
T. M. LLOYD, M. D.
R. M. WYCKOFF, M. D.

The President's address being next in order, Dr. Bryant announced that he deemed it but just and proper to postpone the reading of the address until the opening of the Afternoon Session when the discussion on Malignant Disease would properly begin.

There were no reports of delegates to other Branches this year.

REPORT OF EXECUTIVE COMMITTEE, 1895-96.

Your Committee begs leave to report that little less than the routine business has been called for during the past year. The financial condition of this Branch still continues satisfactory as shown by the Treasurer's statement. The receipts for the past year were from assessments collected, $19; by interest, $79.62; making a total income of $98.62. The general expenses were $76.95. There was an increase in the permanent fund of $40, making a total now in that fund drawing interest of $1,460.

The Treasurer submitted his accounts to the Committee which were duly audited and approved. It was decided to continue the assessment of $1 for the ensuing year upon all those Fellows who have not already joined the permanent fund.

There are at this date nineteen Fellows who have joined the Association during the past year, and these, according to custom, have been exempted from assessment for the ensuing year.

The Committee regrets to have to announce officially the deaths during the past year of the following seven Fellows:

Dr. G. W. Baker,
Dr. Wm. Cramer,
Dr. A. Hühne,
Dr. T. J. McGillicuddy,
Dr. J. A. Roth,
Dr. J. R. Vanderveer,
Dr. C. S. Ward.

Of these Drs. Baker, Cramer, Hühne and Ward were founders of the State Association.

The following minute was spread upon the records of the committee:

It is with sorrow that we have to note among the other losses from our fellowship during the past year, the very recent death of Dr. William Cramer of Dutchess county, a member of this Branch Executive Committee and one of the founders of our association.

We therefore desire to record on our minutes, not only an expression of our very decided loss of his services, but our high appreciation of his sterling qualities as a fellow practitioner and citizen of the younger generation.

Your Committee recommends that a hearty welcome and full privileges of the floor be extended to the delegates from the Kings

County Medical Association, and the invited guests who are expected to be present at this meeting.

On motion this report was ordered on file.

The Treasurer then read his annual statement which was ordered on file.

There were no reports of Special Committees, no unfinished business and no new business.

The biographical sketches were next taken up. The Secretary read the sketches of Dr. George W. Baker by N. W. Leighton, M. D., of Dr. Wm. Cramer by I. D. LeRoy, M. D., and of Dr. Augustus Hühne. M. C. O'Brien, M. D., read the sketches he had prepared on Drs. T. J. McGillicuddy and J. A. Roth. Then the Secretary concluded by reading the sketches of Dr. Chas. S. Ward by E. L. Bissell, M. D., of New Haven, Conn., and of Dr. J. R. Vanderveer.

On motion all these sketches were referred to the Committee on Necrology for publication.

Next business in order was choosing a Nominating Committee. The Secretary then called off the names of the counties of the district in order and the fellows present from each county appointed the following Nominating Committee:

Dr. I. D. LeRoy,
Dr. W. H. Biggam,
Dr. M. C. O'Brien,
Dr. H. Van Hoevenberg.

The session then adjourned at 12:25 p. m., for lunch.

The afternoon session was called to order by the President at 2:05 p. m. After making a few preliminary remarks in relation to the branch, the President asked Dr. N. W. Leighton to the Chair, and then proceeded to read his address as the opening of the "Discussion on Malignant Disease."

The Chair having asked that some recognition and discussion be taken of the very interesting remarks, Dr. Bryant requested that they simply take their place with the other papers of the afternoon for any discussion that may develop.

The President then resumed the Chair, and Dr. E. K. Dunham read his paper on "The Nature of Malignancy in Neoplasms."

Dr. L. Grant Baldwin next followed with his paper on "Malignancy in the Female Genito-Urinary System."

Dr. Jonathan Wright then read his "Remarks on Malignant Disease of the Nose and Throat."

Dr. Max Einhorn next read his paper on "The Early Recognition and Management of Malignant Disease in the Digestive System." At the close of the paper Dr. T. J. Acker of Westchester county presented a bottle containing the contents of a stomach which had been recently removed and offered here in direct connection with the

paper just read. The President suggested that the further consideration of the specimen be carried on by Dr. Baker and Dr. Einhorn.

Dr. J. W. S. Gouley then made a few verbal remarks on "Malignant Disease in the Male Genito-Urinary System."

Dr. W. B. Coley followed with his paper on "The Treatment of Inoperable Malignant Tumors."

There was no general discussion of the topic, but the President made a short summing up in a statement of what conclusions might be fairly drawn from the remarks of the afternoon.

The report of the Nominating Committee was then read as follows: For members of the Executive Committee, to represent—

Dutchess County,	Dr. I. D. LeRoy.
Kings County,	Dr. J. D. Sullivan.
New York County,	Dr. Ellery Denison.
Orange County,	Dr. M. C. Conner.
Putnam County,	Dr. G. W. Murdock.
Queens County,	Dr. E. G. Rave.
Richmond County,	Dr. H. C. Johnston.
Rockland County,	.....
Suffolk County,	Dr. Frank Overton.
Sullivan County,	Dr. J. L. C. Whitcomb.
Ulster County,	Dr. M. Gage-Day.
Westchester County,	Dr. E. F. Brush.

On motion the report was accepted and the Committee discharged.

As there was no quorum present of this new Committee, the meeting called for by the by-laws was not held.

The President declared the meeting adjourned at 4:55 p. m.

The register showed 28 fellows, 3 delegates and 5 invited guests present.

E. H. SQUIBB, *Secretary.*

NEW YORK COUNTY MEDICAL ASSOCIATION.

ANNUAL REPORT.

The following is a brief review of the scientific work for the year ending with the meeting of October 16, 1899:

Meeting of October 17, 1898.

Dr. Frederick Holme Wiggin reported "A Case of Abdominal Hysterectomy with Appendectomy and Resection of the Ileum by a Modification of Maunsell's Method." He also presented two large abdominal tumors, with the histories of the cases. They were discussed by Drs. J. A. Wyeth, Thomas H. Manley and Leon T. Le Wald.

Dr. T. D. Crothers, of Hartford, read the paper of the evening, entitled "The Medical Side of the Alcoholic Problem." He deplored the fact that the study of the effects of alcohol had been left largely to the laity. After describing the baneful effects of the moderate use of alcohol, attention was called to the most approved treatment for alcoholism. The paper was discussed by Drs. Wickes Washburn, T. H. Manley and Henry Illoway.

At the close of the meeting, Dr. A. Ernest Gallant exhibited a peculiar foreign body of vegetable orgin that he had removed from a septic uterus.

Meeting of November 21, 1898.

Dr. Frederic S. Dennis presented "A Case of Stricture of the Oesophagus developing after Typhoid Fever, and Successfully Treated by Gastrostomy;" also two cases of "Tuberculous Disease."

Dr. Robert Abrahams presented a case of "Lupus Erythematosus with Probable Malignant Degeneration," which was of special interest because, according to the history, it had existed for over forty years.

Dr. Thomas H. Manley presented "A Case of Osteomyelitis of the Tibia Successfully Treated by Trephining and Drainage;" also cases of "Severe Crushing Injuries," illustrating what might be accomplished by making use of an "embalming dressing" until a distinct line of demarcation had formed. Dr. Manley also exhibited several small tumors.

Dr. John F. Erdmann exhibited the good result obtained in a case of "Resection of the Head of the Humerus for Severe Injury."

Dr. Edward A. Tracy, of Boston, presented a brief communica-

tion on "Wood Fibre Splints as a Safe and Quick Method of Joint and Bone Fixation."

Dr. Wickes Washburn read the paper of the evening on "Montauk Point and the Government Hospitals," which was illustrated freely by maps and drawings.

Meeting of December 19, 1898.

Dr. John A. Wyeth presented a clinical paper illustrative of "Conservative Treatment of Stricture of the Bowel," "The Treatment of Carcinoma by Caustics" and of the "Injection of Arsenious Acid into Malignant Growths."

Dr. J. Herbert Claiborne read a paper on "Exophthalmic Goitre," which was discussed by Drs. Francis J. Quinlan and W. M. Leszynsky.

Dr. Ogden C. Ludlow then read a paper entitled, "A Fallacious Test for Albumen in the Urine," in which he pointed out that the proposed use of alcohol for this purpose was totally unreliable, although opening up some interesting questions as to the nature of the precipitate thus produced. The paper was discussed by Drs. Louis Faugeres Bishop and James Cameron Mackenzie.

At the close of the meeting Dr. Wiggin exhibited "A Gangrenous Appendix" removed from a person who had presented but slight evidence of constitutional disturbance.

Meeting of February 20, 1899.

Dr. William M. Leszynsky exhibited an interesting "Case of Acromegaly," and briefly reviewed the salient features of this strange disease. It was discussed by Professor Oliver T. Osborne of the Yale Medical School, who had made a critical study of the subject; also by Dr. R. Abrahams.

Dr. George Tucker Harrison, in retiring from the Presidency, made a few fitting remarks, dwelling particularly on the honor and dignity of the profession of medicine, and exhorting the younger members to walk steadfastly in the path blazed out by the noble medical fathers who had gone before.

Dr. Frederick Holme Wiggin, on assuming the presidential chair, took as the theme of his Inaugural Address "The Code of Medical Ethics," and showed very clearly that it was neither narrow nor antiquated, and that there was good reason for hoping and believing that in the near future the profession of this State would again be a united body.

Dr. Von Beverhout Thompson then read the first scientific paper of the evening, which was entitled "Some Remarks on Warburg's Tincture." It was discussed by Drs. T. H. Manley and Wickes Washburn.

Dr. Louis Lichtschein read the second paper, the title of which

was "Prolonged Sleep in the Treatment of Chorea." The paper was discussed by Drs. A. Jacobi, Wickes Washburn and O. T. Osborne.

Dr. Thomas J. Hillis presented the third paper, taking as his theme "The Present Attitude of the Medical Profession toward Illegal Practitioners." It was discussed by Drs. A. Jacobi and L. Duncan Bulkley.

Meeting of March 20, 1899.

Dr. F. H. Wiggin exhibited "A Large Uterine Fibroid;" Dr. Francis J. Quinlan "A Fibro-myoma of the Larynx" and Dr. Charles I. Proben "A Blighted Ovum," "An Improved Artery Clamp" and "Some Porto Rican Charms." Dr. Ferd. C. Valentine exhibited "An Improved Urethroscope" and demonstrated its action on a patient.

Dr. Hernann Grad presented an interesting "Report of a case of Successful Excision of a Gastric Ulcer," which was discussed by Drs. Parker Syms, J. F. Erdmann, T. H. Manley and Frank Ferguson.

Dr. Louis Faugeres Bishop read a paper on "The Diagnosis and Treatment of Fluid in the Pleural Cavities," which was discussed by Drs. J. Blake White, George Tucker Harrison, J. E. Traub and M. C. O'Brien.

Dr. Seymour Oppenheimer also read a paper entitled "The Effect of Atmospheric Changes on the Hearing in Chronic Catarrhal Otitis Media." This paper was discussed by Drs. Edward B. Dench, C. G. Coakley, Edward Fridenberg and Francis J. Quinlan.

Meeting of April 17, 1899.

Dr. Thomas H. Manley presented a case of "Corrected Deformity following Fracture" with the object of calling attention to what might be accomplished in these cases by secondary osteoplasty.

Dr. R. Abrahams exhibited a child with a "Patent Meckel's Diverticulum." The case was discussed by Drs. David P. Austin and Parker Syms.

Dr. Louis Fischer presented a communication on "Recurring Laryngeal Stenosis after Intubation," and exhibited intubation tubes adapted especially to these cases. It was discussed by Dr. Francis J. Quinlan.

Dr. Herman J. Boldt read a paper on "Extrauterine Pregnancy." In the discussion of this communication, Dr. J. E. Janvrin spoke of the symptoms of ectopic gestation and of the quite general abandonment of the electrical treatment; Dr. Andrew F. Currier, of the deformities of the child and their causes, and Dr. E. A. Ayers of the management of the placenta.

Dr. Carl Beck read a paper on "Fractures of the Lower End of

the Radius," which was discussed by Drs. John W. S. Gouley, Charles Phelps and Parker Syms.

Meeting of May 15, 1899.

Dr. F. H. Wiggin reported "A Case of Resection of the Intestine and Sigmoid Flexure for Carcinoma," which was discussed by Dr. E. D. Ferguson, of Troy.

Dr. Louis Fischer presented a "Child suffering from Gastric Ulcer." The case was discussed by Dr. H. B. Sheffield.

Dr. Francis J. Quinlan reported "A Case of Impaction of a Foreign Body in the Larynx, with Recovery after a High Tracheotomy."

Dr. William T. Jenkins presented, in this connection, a large series of pathological specimens illustrative of "Sudden Death from Foreign Bodies in the Larynx." The discussion was participated in by Drs. R. H. M. Dawbarn, John W. S. Gouley and E. D. Ferguson.

Dr. Edward D. Ferguson, of Troy, read a paper entitled "Some Considerations relative to Colloid Cancer in the Abdomen." It was discussed by Drs. Dawbarn, Gouley, Parker Syms, John J. McGrath, David P. Austin and Wiggin.

Dr. J. H. Woodward then read a paper on "Epiphora."

Meeting of June 19, 1899.

Dr. Thomas F. Reilly read a paper entitled "Acute Bronchitis—A Symptom; its Treatment from an Etiological Standpoint."

Dr. L. W. Zwisohn presented an interesting "Foetal Specimen."

Dr. Henry Mann Silver read the paper of the evening on "Non-Malignant Strictures of the Oesophagus and Their Treatment." In discussing it Dr. George Woolsey considered the instruments most suitable for the purpose; Dr. Willy Meyer took up the subject of gastrotomy and gastrostomy with dilatation of the lower third of the oesophagus; Dr. Joseph D. Bryant treated of oesophagotomy for strictures low down and Dr. Robert Abbe described an ingenious method of dividing the oesophageal strictures situated low down. The discussion was continued by Drs. John A. Wyeth, Max Einhorn and B. Farquhar Curtis.

Meeting of October 16, 1899.

Dr. Carl Beck presented four persons out of a family of ten, all of whom were sufferers from gallstones. One of them was particularly interesting because she also had a transposition of the viscera, as proven by the operation and by skiagraphs.

Dr. E. Gaillard Mason presented "A Case of Spastic Spinal

Paralysis," which was discussed by Drs. W. M. Leszynsky and M. C. O'Brien and F. M. Nye.

Dr. Robert Newman presented "A New Galvano-cautery instrument for the Bottini Treatment of Hypertrophied Prostate." Discussed by Dr. L. B. Bangs.

Dr. David P. Austin read a paper on "Vaccination," in which he took the ground that vaccination should be repeated annually in a child until immunity had been established, and that then it was likely to last for the remainder of the person's life.

The paper was discussed by Drs. J. H. Huddleston, Frank S. Fielder and Henry Illoway.

Dr. John W. S. Gouley presented an elaborate essay entitled "Notes on Urethral Catheterism, Catheters and Bougies," which was discussed by Drs. L. Bolton Bangs, Joseph D. Bryant, S. Alexander and Carl Beck.

Dr. John Shrady then delivered "A Memorial Address" on our recently deceased member and ex-president, Dr. S. B. Wylie McLeod.

SUMMARY.

Medical papers	14
Surgical papers	5
Obstetrical and gynecological	1
Instruments and apparatus exhibited	4
Specimens exhibited	18
Cases presented or reported	27
Memoirs	1
Total number of contributions	70

At the annual meeting, January 16, 1899, the following officers were elected:

President, Dr. Frederick Holme Wiggin.

First Vice-President, Dr. Parker Syms.

Second Vice-President, Dr. Edwin Gaillard Mason.

Recording Secretary, Dr. Ogden C. Ludlow.

Corresponding Secretary, Dr. Charles E. Denison.

Treasurer, Dr. John H. Hinton.

Executive Committee, Drs. George Tucker Harrison, Francis J. Quinlan and John Shrady.

At the meeting of March 20, at the instance of Dr. Stephen Smith, the association memorialized the New York Legislature on the desirability of having more trees planted in the streets of the city, and urged the passage of Senate bill, No. 612, which had for its object the achievement of this much desired result.

At the meeting of April 17, the Committee on Legislation presented its report, and on learning therefrom that the Dispensary

Bill had passed both the Senate and Assembly, and was at that time awaiting the Governor's signature, the Association immediately directed that an official telegram be sent to his excellency, Governor Roosevelt, petitioning him to sign the bill. This message was sent the same evening, and the successful passage of that bill is now a matter of record.

The meetings of the Association during the year just past have been full of interest, and the attendance has rapidly increased, so much so that it was thought expedient to seek accommodations in a larger hall. In pursuance of this plan, the meetings of the Association, beginning with that of April 18th, have been held in the large hall of the New York Academy of Medicine.

Attention is called to the fact, that this year also marks the birth of a new enterprise—the publication, with the assistance and co-operation of the New York State Medical Association and of the Kings County Medical Association, of a medical directory of New York, New Jersey and Connecticut. Like other new undertakings of this magnitude there have been many vexatious delays, and many obstacles have had to be surmounted, but the first volume has been completed and the edition distributed, and beyond that the book must speak for itself.

Respectfully submitted,

FREDERICK HOLME WIGGIN,
President.

O. C. LUDLOW,
Recording Secretary.

PROCEEDINGS.

FIRST DAY, OCTOBER 24.

Morning Session.

The meeting was called to order by the President, Dr. Joseph D. Bryant, of New York county, at 10 a. m. promptly, in the large hall of the New York Academy of Medicine.

The report of the Committee of Arrangements was presented by the Chairman, Dr. Frederick Holme Wiggin, and, on motion, was accepted.

The annual report of the Council was read by the Secretary, and was accepted and ordered placed on file.

Dr. Wickes Washburn presented the report of the Committee on Charities. On motion, it was accepted and placed on file.

Dr. E. Eliot Harris presented the report of the Committee on Legislation. On motion, it was accepted and placed on file.

On motion, the report of the President of the Branch Associations, and of the President of the New York County Medical Association, were read by title.

The President announced the appointment of Dr. John W. S. Gouley as member at large on the nominating committee.

Adjourned at 12:45 p. m.

Afternoon Session.

The meeting was called to order by Dr. James G. Hunt, of Utica, and Dr. Douglas Ayres was asked to temporarily occupy the chair while Dr. Hunt was engaged in committee.

The session was devoted to the reading and discussion of scientific papers.

Adjourned at 6 p. m.

Evening Session.

The meeting was called to order by the President at 8 p. m.

The session was devoted to a discussion on medical expert testimony, and on adjournment at 10:45 p. m. a collation was served.

SECOND DAY, OCTOBER 25.

Morning Session.

The meeting was called to order by the President promptly at 10 a. m. There being no communications from the Council, or from special committees, progress was reported.

Under the head of new business, Dr. De Lancey Rochester, of Erie county, asked the Association to join with certain societies in Buffalo in inviting the American Medical Association to meet in Buffalo in the year 1901. He stated that the Buffalo Academy of Medicine, the Business Men's Association, the Board of Trade, and several other mercantile associations, together with the Mayor and Common Council had sent an invitation to the American Medical Association to meet there in that year. The invitation had been received at the last meeting of the American Medical Association, and had been laid on the table for future action.

Dr. Rochester then moved that this Association extend an invitation to the American Medical Association to meet in Buffalo in the State of New York, in the year 1901. Seconded by Dr. George W. Goler, of Monroe county, and carried unanimously.

Dr. Wickes Washburn, of New York county, offered the following resolution:

Resolved, That the New York State Medical Association approves of the State establishing sanatoria for the care of consumptives, and that it is the sense of this association that sanatoria for incipient cases should be conducted in connection with the farm colony. Seconded by Dr. M. C. O'Brien, of New York County. Carried.

Adjourned at 1 p. m.

Afternoon Session.

The meeting was called to order by the President at 2 p. m.

The entire session was devoted to a discussion on typhoid fever.

Adjourned at 5:45 p. m.

The evening was taken up with a reception given in honor of Dr. W. W. Keen, of Philadelphia, President of the American Medical Association, and Dr. William Osler, of Baltimore, and Dr. Reginald Fitz, of Boston. It was held in the hall of the Academy of Medicine. The attendance was large and thoroughly representative.

THIRD DAY, OCTOBER 26.

Morning Session.

The meeting was called to order by the President at 10 a. m.

Dr. James G. Hunt announced that the Nominating Committee would unanimously report as follows:

President—Dr. E. D. Ferguson, of Rensselaer county.

Vice-President, First District—Dr. Charles H. Glidden, of Herkimer county.

Vice-President, Third District—Dr. J. M. Farrington, of Broome county.

Vice-President, Fourth District—Dr. W. H. Thornton, of Erie county.

Vice-President, Fifth District—Dr. J. C. Bierwirth, of Kings county.

Secretary (holds over)—Dr. M. C. O'Brien, of New York county.

Treasurer—Dr. E. H. Squibb, of Kings county.

members of council.

First District—Dr. Douglas Ayres, Montgomery county.

Second District—Dr. Charles Munger.

Third District—Dr. E. M. Lyon.

Fourth District—Dr. W. L. Ayer.

Fifth District—Dr. M. W. Townsend.

Sixth District—Dr. F. H. Wiggin.

At Large—Dr. Joseph D. Bryant.

On motion the report was received and the Secretary, instructed by the Association, cast a ballot for the election of the persons recommended in the report. They were declared elected.

The Auditing Committee reported that it had examined the Treasurer's accounts and vouchers for the same and had found them correct. On motion, the report was accepted.

Dr. Stephen Smith, Chairman of the Committee on Quarantine, presented the report of his committee.

On motion the report was accepted, and the committee continued.

Dr. E. D. Ferguson stated that the Wayne County Society of Michigan was making an effort to secure uniformity in the examinations for license to practice medicine throughout the country. He then moved that a committee of three be appointed by the Council to secure uniformity of action in this matter. Seconded and carried. Announcement of committee deferred.

Dr. E. D. Ferguson then moved the adoption of the following:

Resolved, That it is proper for the branches to recommend at their annual meeting the name of a member of the branch to be selected as vice-president of that branch for the ensuing annual meeting. Seconded by Dr. Didama and carried unanimously.

Dr. Wickes Washburn, of New York county, moved that a committee of five be appointed by the chair to prepare a leaflet of instructions as to the proper treatment of consumptives in their homes, along the lines designated by Dr. Knopf in his paper. Seconded by Dr. O. C. Ludlow, and carried.

Dr. W. E. Finder, of Rensselaer county, moved that the Association recommend to the Committee of Arrangements that the same hall be secured for the next annual meeting. Seconded and carried.

Adjourned at 12.45 p. m.

Afternoon Session.

The meeting was called to order by the Vice-President, Dr. James G. Hunt, at 2 p. m.

At the conclusion of the scientific programme Dr. E. D. Ferguson moved that the Association extend a vote of thanks to Dr. Frederick Holme Wiggin for his great and resourceful work in making the preparations for this meeting, and for his successful conduct of the same. Seconded and carried unanimously.

The President announced the appointment of the following to serve on the committee charged with the preparation of a leaflet giving popular information regarding the care of consumptives: Drs. S. A. Knopf, H. D. Didama, De Lancey Rochester and George W. Goler. He added that as the committee had not been appointed with power, the pamphlet must be referred to the Council for approval before publication.

Dr. Bryant then said: Before severing my connection officially with you as your presiding officer I wish to thank you for the universal courtesy which you have displayed in humoring me in all of my idiosyncrasies. I desire also to add to that which has been already said by Dr. Ferguson concerning my high appreciation, as presiding officer, of the indefatigable, never-ceasing, early-and-late labors of Dr. Wiggin. (Applause.) I may say that when I subscribed five dollars for anything, Wiggin was after it in twenty-four hours. I commend his judgment because there is nothing so certain in this life, you know, as an established bank account when expenditures of a definite kind are to be met. I have only one more thing to say. This meeting has been, so far as my observation goes, the most successful in the history of this Association. It is not for me to say why it is so; it is for you to consider that. It is for you to go back, looking at the efforts that have been made in the past, and reading between the lines in any way that may suit your fancy or judgment and come to your own conclusion, but do come to this conclusion: That no meeting can ever be a success unless it has the confidence and support of the members. Those who

remained at home will probably regret it; those who have been here may be justly proud that they were of that number that constituted the largest meeting in the history of this organization. Let those at home reflect during the coming year, and add their efforts to yours, and then the next meeting will exceed the present one.

(Turning to the President-elect, Dr. Ferguson.) I now wish to hand over to my successor the emblem of his authority (the gavel) saying to him at the same time: "Use it wisely and judiciously; wield it with forethought and discretion; then will its admonition always be heeded."

Dr. E. D. Ferguson: In receiving this sign of office I do it with deep consciousness of my want of qualification to wield it carefully. It is the first time that I have ever held it in my hands officially. When it was suggested to me that I was the choice of the committee for your presiding officer for the coming year I asked most strenuously, and with the most urgent reasons possible, for your committee to select some one else. I felt that I could work better on the floor—better elsewhere than in the chair of the presiding officer—but with kind insistence they assured me that I must accept, and, feeling that it was a duty to serve the association wherever called, I obeyed the commands of the committee and of the association, and will do the best that lies in my power to serve you in the ensuing year. Though I may not do as well in the chair as on the floor, or in the registration room, I will do all that lies in my power. For these sixteen years I have never failed to be present at the meetings of the association, and every meeting of the Council, and I did it because I believed I was discharging a high professional duty. That same sense of duty abides with me still, and whether I may be with you for one year or for ten or more years, I hope that sense of duty will continue, and that I may have sufficient strength to carry out that duty.

There is a renewed energy in the association. I will not undertake to analyze it, but there is a life in the association that I believe portends well for the profession.

Mr. Chairman, if I only felt that I could bring to this office a tithe of that ability which comes from the familiarity with presiding work which you have manifested, whether acquired by intuition or experience, I should feel that I could discharge these duties better. We feel that under your administration as presiding officer, we have had the affairs of the association conducted with expedition; there has been no dilly-dallying or shilly-shallying with regard to the hour of commencement or the discharge of our business.

I thank you, gentlemen of the Association, for the honor conferred and I thank you, Mr. Chairman, for this presentation to the Association.

Dr. Wiggin: I think my labors have been very much overesti-

mated, and I wish to say that I have been very ably seconded by Dr. Charles E. Denison. I hope a vote of thanks will be given to him.

Dr. A. A. Hubbell moved such a vote of thanks. The motion was seconded and carried unanimously.

Dr. H. D. Didama: I move that the very best thanks of the Association be tendered to the incomparable retiring, and now retired President of this Association, for his work, which can never be surpassed, and with difficulty equalled. Seconded, and carried unanimously.

The meeting was declared adjourned at 4.30 p. m.

Fifteenth Annual Report of the Library Committee of the New York State Medical Association, October 23, 1899.

The Library Committee has the honor to report that on October the library contained nine thousand five hundred and ninety-nine (9,599) volumes: the catalogued and loose pamphlets, and many unbound medical journals; and that since then there have been received one hundred and forty-two (142) bound volumes from the estate of the late Dr. John G. Truax; four (4) bound volumes from Dr. E. D. Ferguson; ten (10) bound volumes and unbound journals from Dr. F. H. Wiggin; twelve (12) volumes of transactions of societies in exchange for our transactions; the Index Catalogue (1 volume) of the Surgeon General's Library; and the Index Medicus, unbound. The library contained on September 30, 1899, nine thousand seven hundred and sixty-eight (9,768) volumes, in addition to many pamphlets and unbound medical journals. During the year ending on September 30, 1899, one hundred and twenty-seven visitations were made to the library by Fellows of the Association, medical students, and other persons.

J. W. S. GOULEY, M. D.,
Chairman of the Committee.

Report of the Committee on Publications.

During the past year the regular volume of transactions, consisting of a book containing 792 printed pages, has been issued and distributed to those of our members entitled to receive it, and also sent to sundry medical libraries, societies and journals.

An edition of one thousand copies was printed and the amount paid to the Rumford Press, of Concord, N. H., for the printing, binding and partial distribution was $1,493.39.

In addition the Association joined in the re-issue of the Medical

Directory of New York, New Jersey, and Connecticut, contributing thereto the sum of $300.

Both these publications are in the hands of the Fellows of the Association, and require no commendatory word from the Committee.

[Signed] E. D. FERGUSON,
Chairman.

Report of the Special Committee on National Health Legislation.

The undersigned members of the Special Committee on National Health Legislation respectfully submit the following report:

Your Committee received its appointment from the President of the Association on the 15th of December, 1898. In his letter of instructions, the President stated, that it would be the duty of the Committee to co-operate with Committees of other medical bodies in promoting the passage of a bill through Congress creating a National Bureau of Health.

Immediately after its appointment the Committee, through its Chairman placed itself in communication with Dr. U. O. B. Wingate, of Milwaukee, Chairman of the Committee on Public Health of the American Medical Association, notifying him of its appointment and of its instructions to co-operate with the Committee of the Association.

Dr. Wingate replied, explaining the work of the Committee and the present state of progress of health legislation. At that time there were three bills before Congress, one known as the "Spooner Bill," a second called the "McCaffrey Bill," and a third the "Hepburn Bill." The "Spooner Bill" was introduced into the Senate by Senator Spooner, of Wisconsin, and was supported by the Committee of the American Medical Association.

A brief analysis of these several bills will be neessary to enable the Association to act intelligently on the report of your Committee and to determine what action will be advisable during the coming year.

The "Spooner Bill" creates a Bureau in the Treasury Department which shall be known as the "National Commission of Public Health." It is to be composed of a Commissioner and of a representative from each State and Territorial Board of Health, the Surgeons-General of the army and of the navy and the Supervising Surgeon-General of the marine-hospital service. The executive officer of the Commission is to be appointed by the President of the United States, but must be a physician having the following qualifications, viz.: Holding a diploma from a legally incorporated Medical College; in good standing in the profession; having at least ten years experience in the practice of his profession; learned in sanitary

science; practically familiar with quarantinable diseases and holding a membership in one or more reputable Sanitary or Medical Societies or Associations in the United States. There is to be an Assistant Commission, having similar qualifications and appointed by the Secretary of the Treasury upon the recommendation of the Commission. There is to be an Executive Committee of nine members of the Commission, the representatives of the army, navy and marine-hospital service and the Commissioners being ex-officio members and the other five elected by the Commission annually, at Washington, and at such other times as the Secretary of the Treasury may determine. The Executive Committee has full power to transact business in the intervals of the meeting of the Commission, and may modify regulations and even make new regulations which, when approved by the President of the United States, shall have the same force and effect as if they had been adopted by the Commission.

The duties of the Commission are to collect and disseminate information with regard to the prevalence of infectious diseases in this and other countries; to collect and publish vital statistics; to prepare rules and regulations for securing the best sanitary conditions of vessels from foreign ports and for preventing the introduction of infectious diseases into the United States, and their spread from one State or Territory into another; and in general to make investigations, publish information, and formulate rules with a view to the preservation of the public health, etc.

This bill creates, as appears from the preceding summary, a Public Health Commission, as a Bureau in the Treasury Department, composed of representatives of existing boards of health of the States and Territories, with an Executive Officer who must be a medical man of the highest character and attainments. To give it efficiency at all times there is an executive body that is empowered to change regulations or make new ones, as the emergency may require. The McCaffrey and Hepburn Bills are alike in purpose. They are measures designed to give additional powers and duties to the Marine Hospital Service.

Owing to the circumstances leading to the war with Spain, Congress was so much occupied with new and exciting questions that neither of these health bills was brought to the stage of final action.

At the last meeting of the American Medical Association, held at Columbus, Ohio, the Committee on National Health Legislation made its report, detailing the progress made at the last session of Congress. The Association adopted the report of the Committee and continued it for the ensuing year. We learn from Dr. Wingate, its chairman, that the effort to pass the "Spooner Bill" will be renewed in the next Congress with a fair prospect of success. The proposed co-operation of your Committee with the Committee of the

American Medical Association has been cordially received by the latter. It is for this Association to determine whether or not it will continue during the next year to co-operate with the parent Association in its efforts to secure the passage of the "Spooner Bill."

The following statement may be made for those not familiar with National Health Legislation. The only health powers now exercised by the General Government are through the Marine Hospital Service, a Bureau in the Treasury Department organized to have the care of sick sailors. The McCaffrey and Hepburn Bills are designed to give that bureau additional powers and thereby make it our central health authority. The American Medical Association proposes to create a Government Health Commission having as its basis the medical profession of the United States, as represented in the boards of health of the States and Territories. The "Spooner Bill" is designed to accomplish that purpose.

All of which is respectfully submitted.

STEPHEN SMITH,
E. D. FERGUSON,
Committee.

NEW YORK, *October* 24, 1899.

Report accepted and Committee continued, October 26, 1899.

Report of Committee on Charities and Public Health.

Last year the Chairman of this Committee had the honor to address this body on the subject of "True and false Medical and other Charities," and closed with the following remarks: (P. 166-7.)

"I venture to hope that the State Board of Charities will be able to convince all doubters of the efficiency, the justice, and the necessity of such a bill (Dispensary Bill of 1898), and that it may be passed at the next session of the Legislature.

"This bill would, I believe, relieve the taxpayers by reducing pauperism, and in the end would lead to a recognition of what I believe to be a fact, that mendicancy is a disease and requires treatment as such. This treatment must contemplate the elevation of the individual, a cultivation of self-reliance, and a self-respect incompatible with dependency. This cannot be done except by co-operation and co-operation cannot be had without legislation."

Within 24 hours of the appointment of the Committee on Charities, a meeting of the Committee had been called and the Chairman was authorized to confer with any and all persons interested in the subject, and to do such things as would promote the passage of the bill of the year previous. Reprints of fine papers read before the National Conference of Charities and Corrections were placed in the hands of every legislator and many physicians throughout the

State. As will be seen from my address on True and False Charities, a conference had been entered into between the present chairman and the branch of the profession that had theretofore considered itself ignored.

The conferences were continued thereafter as Chairman of this Committee—and members of the Dispensary Managers Committee—were also at the conference. Two of the members of your Committee on Charities have been during the past winter serving also on the Committee of the Dispensary Managers, and have done much to bring the contending forces together.

Early in the session of the legislature a bill was drawn by those formerly opposed to any legislation and as it grew, it was, from time to time, referred to your Chairman. We were able—the members of your Committee serving in the Dispensary Managers Committee—and your Chairman—having the revision of each new draft of this bill, to remould it before it saw the light of day. When it did appear the friends of the old bill, with few exceptions, took great alarm and could see no good in this new production of the Dispensary Managers and their friends. To your Chairman and a majority of your Committee on Charities there seemed to be much good to come from such a bill, and we therefore encouraged its introduction and exercised all our energy to have the bill of a year ago delayed—for we saw plainly that if a compromise was to be effected the other side must be committed to something and this would be done so soon as they had introduced a bill no matter if it was not satisfactory—moreover we had freely told those who drew the bill that it was unconstitutional and that the framers of the bill of a year ago would undoubtedly ask for amendments. We had in mind the getting of the bill nearer to the one of last year in the same manner as had been done in 1897. Our friends, the managers of the old bill—could not be restrained longer and now introduced the bill of 1898. I very much feared that this would lead to no legislation for this year, as we had been informed by the legislators that there was no trouble to pass a bill—where all agreed; agreement was necessary however, and we believed now that but for a lucky accident, non-action would have been the unfortunate result. A bill was just about this time prepared by a physician, consented to by the Dispensary Managers Committee, tacitly accepted by the managing portion of the State Board of Charities and by the Senator who, last year as always, did most to further what we have all along believed to be the proper legislation. As it happened, this bill provided for certain things advised by the Chairman of your Committee at the annual meeting of this body in 1897. There were on the other hand many things in the bill not at all satisfactory to me—and which I knew could not be to those who had worked so faithfully and long on the bill of 1898. I was fortunate enough to secure the

co-operation of the Chairman of the State Society Committee on Legislation who had drawn this bill, and together, we prepared the first copy of the bill that finally became a law [by taking such features from this bill as represented the compromise first proposed at the session of this body in 1897, and (See P. 122) those only were added to the bill of 1898 to make the law of 1898].

This amended bill of 1898 met with no opposition from any of those who formerly believed in no legislation, indeed some of the former representatives of "no legislation" were now as active in pushing the measure which is the law to-day, as were any of the original friends of the bill of 1898.

As some of those formerly opposed to legislation enacted a promise from your Chairman that if they favored the idea of legislation he would request the State Board of Charities to consult all interested before promulgating rules, immediately after the bill had passed the Senate feeling sure from previous knowledge of his ideas regarding charity matters, and from reliable information received earlier in the winter, that the Governor could not fail to sign the bill, we gave ourselves no further concern, but at once made the request of the President of the State Board of Charities to arrange to have all who might be interested given a chance to put their views before the State Board of Charities Committee appointed by that Board to arrange some views, and prepare suitable rules to be submitted to the Board.

A circular letter was sent by this Committee of the State Board of Charities to many people.

Your Chairman was frequently requested to give his ideas of how the various questions should be answered.

Up to this time in the three years work that had been done on this matter, I never for a moment was at a loss for an opinion until now.

I had seen the ill effect of proclaiming ideas from the house tops, had seen how hard it was to consult every one who thought he should be consulted—and was at a loss to know how some of these matters might affect certain legitimate interests.

Finally on the 25th of July at the Charity Organization Rooms, 105 East 22nd Street, a meeting of the various interests was called together by your Chairman and the stenographic report thereof follows:

Dr. Stephen Smith, *Chairman Committee on Dispensaries, State Board of Charities, Albany, N. Y.:*

Dear Sir:—As it seems advisable that an answer to your request for suggestions regarding rules and regulations for the government of dispensaries should embody the views of different persons, who have been interested to make a success of the new dispensary law,

the undersigned requested a few such persons to meet and exchange views. Such a meeting was held in the United Charities Building on Tuesday, July 25th, with the following gentlemen present:

Dr. A. M. Jacobus, Ex-president of the County Medical Society, who was chairman of the meeting;

Dr. E. Eliot Harris, Chairman, Committee on Legislation, State Association;

Dr. Frank Van Fleet, Chairman, Committee on Legislation, State Sociey;

Dr. A. B. Norton, President, State Homeopathic Society, who, however, did not remain, but designated Dr. Herbert Dana Schenck as his personal representative;

Mr. Robert W. deForrest, President of the Charity Organization Society;

Mr. Edward T. Devine, General Secretary of the Chariey Organization Society;

Dr. Lee K. Frankel, Manager, United Hebrew Charities;

Dr. Wickes Washburn, Chairman, Committee on Charities, State Association, who was secretary of the meeting.

Dr. Frederick Holme Wiggin, Dr. A. Hadden and a few others were represented either by letter or through others with whom they had discussed the matter.

The conclusions reached by the conference are briefly stated as follows:

In answer to question No. 1, "What facts would you require to be attached to each application for a license," it is recommended that there should be required

1st. Name, location, date of incorporation if incorporated, whether incorporated by general law or by special act, names of trustees, names of officers and physicians, number of clinics which it is supposed to hold each week, times in which it is proposed to have the dispensary opened; diseases which it is proposed to treat.

2nd. Evidence that present or prospective income is sufficient to do the work proposed, together with statement of sources of income.

3rd. Evidence of need in the community for such an institution.

In answer to Question No. 2, "What rules and regulations would you recommend to be adopted in accordance with which all of the dispensaries in the state shall furnish medical or surgical relief, advice or treatment, medicine or apparatus?"

1st. That Section 25 of the Dispensary Law be printed in various languages familiar to the patients who frequent the dispensary on signs that shall be displayed where they can easily be seen by the patients.

2nd. That a card be signed by each patient, stating that he is unable to pay for medical treatment and that Section 25 of the Dispensary Law be printed on the back of this card, and that if

a central registration bureau is established, these cards be sent by each dispensary daily or weekly to such central bureau; that the expense of investigation shall be proportioned among the dispensaries on some plan to be devised.

In answer to the question "What methods would you recommend the dispensaries to adopt in order to enforce these rules and regulations," we would recommend that the dispensary prosecute each violation of Section 25; that they question applicants closely regarding their ability to pay and that investigation of doubtful cases should be made by the dispensary or some agency with which arrangements are made for that purpose.

All the points above mentioned were carefully discussed by the gentlemen present, and there was substantial agreement that the recommendations above made are sufficiently radical as a beginning, and that it would be wise for the State Board of Charities to proceed cautiously both in placing unduly severe restrictions upon the dispensaries now in operation and in licensing new dispensaries, unless the need for them is clearly demonstrated. The following letter from Dr. Frederick Holme Wiggin, President, County Medical Association, served to some extent as a basis for discussion and is included in the report since it touches upon some points upon which the conference did not decide to make any formal recommendations:

"My views on the Dispensary Bill are that comparatively few rules will be required to make it effective. I believe in the first place that a placard should be prominently displayed in every dispensary in this state, stating that the institution is one for the treatment of poor persons only, and quoting Section 25, Chapter 368 of the Laws of New York.

Secondly, Patients on making application at a dispensary for treatment should sign a card stating that they are unable to pay for the necessary treatment.

Thirdly, A systematic investigation of all applicants at dispensaries for relief should be made, and in the larger cities, in my opinion, the State Board of Charities should have a central bureau, where they should send daily or weekly, as they deem best, the names and addresses of those who apply to them for treatment. The bureau on receiving the names should investigate the financial condition of the applicants and catalogue the results, so that when an applicant applies to another dispensary, if he is rejected at the first, it will not be necessary to investigate again.

Persons giving wrong names or addresses should be discredited and refused treatment, as well as those who are found to be able to pay. In regard to this last named matter I think great leniency should be shown and a wide discrimination made, for while for one person an income of ten or fifteen dollars may be sufficient for his

needs and also enable him to pay a moderate fee for whatever medical services he may require, for another person with a larger number of individuals depending on him for support, the sum would not prove sufficient.

I also think it will be well that before a dispensary license should be given from the State Board of Charities, the dispensary should give evidence that it has ample means to provide itself with a suitable and proper building and also that it can carry on its work without an appeal for aid to the public treasury, also if an institution of the kind is needed in the locality for the proposed erection.

A long experence with public medical institutions has made me believe that palatial buildings in fashionable neighborhoods have much to do with the fostering of the abuse of medical charity in past years."

Dr. A. Hadden, Trustee of the North Eastern Dispensary, who was not present at the conference, suggests that a new dispensary should be established only when it can be shown that there are five hundred indigent persons within the district where the dispensary is proposed to be located, whose needs are not already provided for. He also recommends that directors or managers should be members of the society; that dispensaries should be regularly incorporated by law; that no board of managers should consist of more than five members and that none should receive compensation, excepting perhaps the secretary, if the Board of Managers deem it necessary. He also suggests that dispensaries should agree in advance to abide by the rules of the State Board and that they be required to keep complete record of patients, as to name, residence, age, nativity, length of time in country, if foreigners, cause of indigency and names of other institutions where they have received relief, and that except in emergency applicants should be required to furnish certificate of indigency from some well-known person.

The opinion was expressed informally at the conference that an application should show in its statement as to income the details as to the source of such income, that is, whether from contributions, fees of patients, legacies, etc., also whether the dispensary is equipped with the necessary buildings and other facilities. Again it was suggested that the dispensary should show sufficient prospective income to make application to the public treasury unlikely. One gentleman expressed the opinion that at the present time there is a sufficient number of incorporated institutions in the City of New York and that before any institution is added to the list it should be shown that there is a positive need for it. It seemed unlikely that such a need would arise, except possibly in the Bronx District, where in time a dispensary may be required.

As illustrating the class of persons who should not receive free dispensary treatment, it was suggested,

1st. That no person should be accepted who is regularly employed by the municipal, state or national government, excepting those employed as laborers and these latter only if there are others depending upon them for support.

2nd. That persons not in government employ shall be treated in the same way whenever the income and domestic conditions correspond to those above indicated.

Various suggestions were made as to the degree of indigency which should be required as a condition of free treatment. Although it is difficult to lay down a positive rule, it was thought that the investigation should ascertain whether the income and general circumstances of the family are such that charitable assistance is necessary. The general opinion was that free treatment should usually be given without investigation on the first application, provided the applicant signed the card and gave satisfactory answers to inquiries at the desk; that investigation when made should be limited for the most part to recurrent cases. It was thought that a clerk or superintendent appointed for this special purpose should interview applicants regarding free treatment, etc., and that this duty should not devolve upon the physician in charge of the clinic.

A committee was appointed, consisting of Mr. Robert W. de Forest, Dr. Herbert Dana Schenck and Dr. Wickes Washburn, to formulate the conclusion of the conference and the present statement has also been admitted for revision to the gentlemen, who were present at the conference.

Trusting that these views may be of service to your committee, I am

Respectfully yours,
(Signed) WICKES WASHBURN,
Secretary of the Conference.

Of course the subject is large and we must not hope to correct all the abuses at once. The subject of appropriation of public moneys to private charities was very effectively handled this winter by the passage of the law putting the discretion in the hands of the local boards (in New York City the Board of Apportionment). On this subject the Chairman of your Committee has appeared before the Board of Apportionment in 1897 and advocated the adoption of certain general principles.

"I believe we should endorse a policy by your Honorable Board that looked towards the changing of the present plan of appropriating public moneys to private charities as rapidly as can be done without doing violence to the interests of any person or corporation.

"The plan that at present obtains seems wrong, in that the public officers appointed for a special purpose are not allowed fully to do

so, and in the further fact that the city pays for care and treatment in the private institutions, in some cases at least, more than twice as much as when like cases are treated in the public institutions under the care of the Commissioners of Charity.

(See report of Commissioners of Charity.., 1896; Also p. 30, Charter, The Greater New York.) (Brooklyn Eagle Reprint.)

"It would seem proper, in view of these facts, and the further fact that the present faculty system has grown slowly but surely, that it should be changed slowly, and that a proper step to take now would be,—first, that no appropriations in lump sums be given to any institution other than those directed by the Public Officials appointed for that purpose, and secondly that no moneys be paid to private institutions except on the approval of such officials, thereby avoiding cases not properly a charge upon the City; thirdly, that when such allowance be made, that it shall be same as allowed the Commissioners of Charities for the maintenance and care of like cases, during the same year, thereby doing away with the present system of discriminating between the necessitous poor."

This winter the Chairman of the Committee on Cities, in the Senate, asked for aid in stemming the attack of the so-called charitable institutions upon the public funds, and your Chairman through proper sources suggested the plan of putting the responsibility upon the local authorities, in place of the State Legislature giving grants to separate institutions. This the Senator at once adopted and the law was passed. Your Chairman then submitted his views to the President of the Department of Charities who adopted them, asked for a copy of document previously filed with Board of Apportionment and himself presented them to the Comptroller with his approval. The Comptroller adopted the views pretty fully and has since been trying to enforce them and collecting all information on the subject possible. (Page 2 Charities, Sept. 16.) The Board of Apportionment has recently adopted these views.

Certain it is, that Sociologists are pretty well agreed that such a plan should be followed.

Let us then congratulate ourselves on what has been accomplished, hoping that the near future will bring forth the fruit desired, a just and proper discrimination in the distribution of all charities.

In the matter of the Adirondack Sanitarium for Consumptives, your Chairman appeared before a Committee of the State Board of Charities, as requested by that body, and gave his views on the subject, viz.:

First, it appears that the highest death rate and actual numbers in New York County occurred during 1886, and since that date there has been a steady decrease in proportion to the total deaths, and in actual deaths from Phthisis until in 1897—the last year of the old City—the deaths from Phthisis are nearly a thousand less

per year, than in 1886. From what can be learned this fact seems to have taken place from the improved conditions of tenement houses—caused by law of 1885—and since recoveries are more apt to be lasting when they take place in home climate, (See Dr. Knopf) and further since we have not nearly as much Phthisis Sanitarium capacity as all England, your Chairman advised delay and a trial of the Home Colony plan, by which the patients' families may accompany them to the Consumptives' Home Colony thus avoiding the objection of so many poor people to leaving there families behind; enabling both the weaklings of the patients' family, and the patients themselves so far as able, to contribute toward their own support and relieving the patients to a great extent from that very harmful monotony of a Sanitarium life.

Your Committee feels that this method should be tried before going into the more expensive and possibly impracticable State Sanitarium, because so few of the really deserving poor can be induced to enter such a Sanitarium for a sufficient length of time, leaving their families, and the salary that supports that family behind, all of which is respectfully submitted.

(Signed)

WICKES WASHBURN, M. D., Chairman.
N. J. HEPBURN, M. D.
DELANCEY ROCHESTER, M. D.
E. D. FERGUSON, M. D.
PARKER SYMS, M. D.

Report of Committee on Legislation.

In submitting the report of the Committee on Legislation, I must say that we have fully realized the honor of representing the New York State Medical Association in Albany. The courtesy and consideration we have received as your representative from the members of the Senate and Assembly and from the Governor himself has lightened the labors of the Committee, for which there will always be plenty of work during the session of the Legislature.

The Committee on Legislation received 190 Medical bills, of which number, 59 were referred to the Senate and Assembly Committees on Cities; 54 to the Committees on Public Health; 22 to the Committees on General Laws and the rest to other Committees.

Your Committee opposed most of the 190 Medical bills introduced in the last Legislature and in many cases had to follow them up until they reached the Executive Chamber and were finally vetoed.

Most of the bills were against the best interests of the Medical Profession; your Committee was compelled to present its reasons for opposing them and were assured that their final defeat was

largely due to its watchfulness. The modesty of the Committee make it hesitate to record the title of the bills whose defeat or enactment as laws were due to the efforts of the Committee on Legislation of this Association; but we feel that the work was so successful in benefiting the whole Medical Profession and the public in general, that we wish to encourage our successors on the Committee in their Legislative work for 1900, believing that the opportunities for successful committee work will be no less than in the year just closed.

Respectfully submitted,

E. ELIOT HARRIS, M. D.
E. D. FERGUSON, M. D.
LEROY J. BROOKS, M. D.

NEW YORK STATE MEDICAL ASSOCIATION.

ANNUAL REPORT OF THE TREASURER FROM OCTOBER 1, 1898, TO OCTOBER 1, 1899.

RECEIPTS—GENERAL FUND.

Balance from last report	$1,782 34	
Dues	2,035 00	
Initiation fees	155 00	
Sale of Transactions	15 00	
		$3,987 34

DISBURSEMENTS.

Sundries, including Transactions	$3,029 77	
Postage	90 00	
Expressage	38 20	
		3,157 97
Balance in General Fund		$829 37

LIBRARY AND BUILDING FUND.

Amount from last report	$3,113 41	
Interest	105 00	
		3,218 41
Total Funds in Treasury October 1, 1899		$4,047 78

(Signed) E. D. FERGUSON,
Treasurer.

Examined by Auditing Committee and found correct.
(Signed)
E. H. SQUIBB,
E. ELIOT HARRIS.

LIST OF FELLOWS.

1899.

LIST OF FELLOWS.

BY DISTRICT AND COUNTY.

FIRST OR NORTHERN DISTRICT.

FULTON COUNTY.

Edwards, John. Gloversville.

1

HAMILTON COUNTY.

McGann, Thomas. Wells.

1

HERKIMER COUNTY.

Douglas, Edgar H. Little Falls.
Garlock, William D. Little Falls.
Original. Glidden, Charles H. Little Falls.
Hayes, Wm. E. Frankfort.
Richards, Seymour S. Frankfort.
Santry, Augustus B. Little Falls.
Original. Young, John D. Starkville.

7

JEFFERSON COUNTY.

Founder. Crawe, J. Mortimer. Watertown.
Original. Johnson, Parley H. Adams.
Joslin, Albert A. Watertown.

3

LEWIS COUNTY.

Crosby, Alexander H. Lowville.

1

MONTGOMERY COUNTY.

Original. Ayres, Douglas. Fort Plain.
French, Salphronius H. Amsterdam.
Original. Johnson, Richard G. Amsterdam.
Klock, Charles M. St. Johnsville.
Meyer, George L. Stone Arabia.
Simons, Frank E. Canajoharie.

6

ONEIDA COUNTY.

Original. Bagg, Moses M. Utica. (Retired list.)
Churchill, Alonzo. Utica. (Retired list.)
Dodge, Amos P. Oneida Castle.
Douglass, James W. Booneville.
FitzGerald, John F. Rome.
Original. Hunt, James G. Utica.
Marsden, William R. Utica.
Munger, Charles. Knoxborough.
Nold, John B. Utica. (Retired list.)
Palmer, Henry C. Utica.
Reid, Christopher C. Rome.
Reid, William B. Rome.
Russell, Charles P. Utica.
Scully, Thomas P. Rome.
Stout, Edward G. Utica.
Sweeney, James M. Utica.
Tefft, Charles B. Utica.
Whaley, James H. Rome.
White, Henry D. Rome.

19

OSWEGO COUNTY.

Bacon, Charles G. Fulton. (Retired list.)
Bates, Nelson W. Central Square. (Retired list.)
Cooley, Frank L. Oswego.
Cooley, R. N. Hannibal Centre.
Original. DeWitt, Byron. Oswego. (Retired list.)

5

SECOND OR EASTERN DISTRICT.

ALBANY COUNTY.

Abrams, Hiram C. Newtonville.
Founder. Bailey, Theodore P. Albany.
Haynes, John U. Cohoes.
Montmarquet, Joseph D. Cohoes.
Founder. Sabin, William B. Watervliet.
Theisen, Clement F. Albany.
Original. Van Vranken, Adam T. Watervliet.
Zeh, Merlin J. Watervliet.

8

CLINTON COUNTY.

Founder. Dodge, Lyndhurst C. Rouse's Point.
Founder. Lyon, Emory M. Plattsburgh.

2

COLUMBIA COUNTY.

Bradley, O. Howard. Hudson.
Fritts, Crawford Ellsworth. Hudson.
Johnson, Henry W. Hudson.
Kittell, Martin M. Kinderhook.
Original. Lockwood, Jordan W. Philmont.
Original. Smith, H. Lyle. Hudson.
Vedder, George W. Philmont.
Wheeler, John T. Chatham.
Founder. Wilson, Thomas. Hudson.
Woodruff, R. Allen. Philmont.
Woodworth, T. Floyd. Kinderhook.

11

ESSEX COUNTY.

Barton, Lyman G. Willsborough.
Original. D'Avignon, Francis J. Au Sable Forks.
Original. LaBell, Martin J. Lewis.
Original. Turner, Melvin H. Ticonderoga.
Wheelock, A. A. Elizabethtown.

5

GREENE COUNTY.

Getty, Andrew H. Athens.
Original. Selden, Robert. Catskill.

2

RENSSELAER COUNTY.

Founder. Allen, Charles S. Greenbush.
Allen, William L. Greenbush.
Baynes, Joseph E. Troy.
Bissell, James H. Troy.
Bonesteel, Howard F. Troy.
Founder. Bonesteel, William N. Troy. (Retired list.)
Original. Bontecou, Reed B. Troy.
Founder. Burbeck, Charles H. Troy.
Cahill, John T. Hoosick Falls.
Church, Thomas C. Valley Falls.
Original. Cooper, William C. Troy.
Crounse, Andrew C. Melrose.
Dickinson, Melville D. Troy.

Founder. Ferguson, Everard D. Troy.
Founder. Finder, William, Jr. Troy.
Gordinier, Hermon C. Troy.
Gravatt, Edwin J. Troy.
Greenman, C. Edgar. Troy.
Founder. Hannan, James C. Hoosick Falls.
Hannan, Thomas H. Hoosick Falls.
Founder. Harvie, John B. Troy.
Original. Heimstreet, Thomas B. Troy.
Hogeboom, Wm. L. Troy.
Original. Houston, David W. Troy.
Hutton, Matthew B. Valley Falls.
Lyons, Edward L. Troy.
Marsh, James P. Troy.
Morehouse, Edgar W. Troy.
Murphy, Grace A. Troy.
Founder. Nichols, Calvin E. Troy.
Founder. Nichols, William H. West Sand Lake.
Phelan, Michael F. Troy.
Founder. Rousseau, Zotique. Troy.
Founder. Seymour, Wm. Wotkyns. Troy.
Original. Skinner, Smith A. Hoosick Falls. (Retired list.)
Smith, Frederick A. Troy.
Tompkins, Fred. J. Lansingburgh.
Ward, R. Halsted. Troy.

38

SARATOGA COUNTY.

Allen, Henry J. Corinth.
Bullard, Thomas E. Schuylerville.
Church, George T. Saratoga Springs.
Founder. Comstock, George F. Saratoga Springs.
Original. Crombie, Walter C. Mechanicville.
Curtis, Pierson C. Round Lake.
Gow, Frank F. Schuylerville.
Hudson, George. Stillwater.
Humphrey, John F. Saratoga Springs.
Original. Johnston, Ianthus G. Greenfield Centre.
Keefer, Charles W. Mechanicville.
Kniskern, Albert C. Mechanicville.
Moriarta, Douglas C. Saratoga Springs.
Palmer, Frank A. Mechanicville.
Parent, Joseph S. Birchton.
Founder. Reynolds, Tabor B. Saratoga Springs.
Original. Sherer, John D. Waterford.
Sherman, Frank J. Ballston.

Smith, Fletcher A. Corinth.
Swan, William E. Saratoga Springs.
Sweetman, James T., Jr. Ballston.
Thompson, Amos W. Saratoga Springs.
Varney, Miles E. Saratoga Springs.
Warner, John W. Saratoga Springs.
Webster, William B. Schuylerville.
Zeh, Edgar. Waterford.
26

SCHENECTADY COUNTY.

Heatly, John Alexander. Schenectady.
Original. McDonald, George E. Schenectady.
Original. Van Zandt, Henry C. Schenectady.
3

WARREN COUNTY.

Fielding, Frederick G. Glens Falls.
FitzGerald, David J. Glens Falls.
Henning, Thomas I. Glens Falls.
Hunt, William J. Glens Falls.
Original. Martine, Godfrey R. Glens Falls.
Montgomery, John J. Luzerne.
6

WASHINGTON COUNTY.

Lambert, John. Salem. (Retired list.)
1

THIRD OR CENTRAL DISTRICT.

BROOME COUNTY.

Founder. Chittenden, Joseph H. Binghamton.
Dudley, Dwight. Maine.
Farnham, Le Roy D. Binghamton.
Farrington, John M. Binghamton.
Greene, Clark W. Binghamton.
Guy, James D. Chenango Forks.
Hough, Frank P. Binghamton.
Knapp, William H. Binghamton.
Lounsberry, Robert L. Binghamton.
Founder. Orton, John G. Binghamton.
Founder. Putnam, Frederick W. Binghamton.
Sheffield, J. Wesley. Binghamton.
White, William A. Binghamton.
13

CAYUGA COUNTY.

Kenyon, Frank. Scipio.
Lewis, Le Roy. Auburn.
Original. Tripp, John D. Auburn.
Woodruff, E. Gould. Auburn.

4

CHEMUNG COUNTY.

Fisher, John C. Elmira.
Ritter, F. Horace S. Elmira.
Squire, Charles L. Elmira.
Original. Wales, Theron A. Elmira.

4

CHENANGO COUNTY.

Original. Blair, Louis P. McDonough.
Original. Brooks, Leroy J. Norwich.
Original. Lyman, Henry C. Sherburne.
Packer, Thurston G. Smyrna.
Phelps, Robert H. Norwich.
Smith, Homer Erastus. Norwich.
Smith, Samuel L. Smithville Flats.
Thompson, Rufus A. Norwich.
Williams, George O. Greene.

9

CORTLAND COUNTY.

Bradford, George D. Homer.
Braman, Harry S. Homer.
Didama, Emory A. Cortland.
Founder. Hendrick, Henry C. McGrawville.
Higgins, Frank W. Cortland.
Founder. Jewett, Homer O. Cortland. (Retired list.)
Reese, Frank D. Cortland.

7

DELAWARE COUNTY.

Drake, James B. Hancock.
Morrow, William B. Walton.
Winnie, John V. E. Sidney.

3

MADISON COUNTY.

Original. Birdsall, Gilbert. N. Brookfield.
Burhyte, Orlando W. Brookfield.
Carpenter, Eugene H. Oneida.
Original. Carpenter, Henry W. Oneida.

Cavana, Martin. Oneida.
Drake, Frank C. Oneida.
Huntley, James F. Oneida.
7

ONONDAGA COUNTY.

Original. Aberdein, Robert. Syracuse.
Ayling, William J. Syracuse.
Brown, Ulysses H. Syracuse.
Campbell, Alexander J. Syracuse.
Founder. Didama, Henry D. Syracuse.
Original. Donohue, Florince O. Syracuse.
Original. Edwards, Amos S. Syracuse.
Original. Edwards, George A. Syracuse.
Founder. Head, Adelbert D. Syracuse.
Founder. Kneeland, Jonathan S. Onondaga. (Retired list.)
Founder. Parsons, Israel. Marcellus.
Founder. Van de Warker, Ely. Syracuse.
Walsh, Charles J. Syracuse.
13

OTSEGO COUNTY.

Founder. Leaning, John K. Cooperstown.
Original. Martin, John H. Otego.
Sweet, Joshua J. Unadilla.
3

SCHUYLER COUNTY.

King, James K. Watkins.
Original. Smelzer, Baxter T. Montour Falls.
2

SENECA COUNTY.

Bellows, George A. Waterloo.
Clark, George W. Waterloo.
Founder. Lester, Elias. Seneca Falls.
Welles, S. R. Waterloo. (Retired list.)
4

TIOGA COUNTY.

Original. Ayer, Warren L. Owego.
Cady, George M. Nichols.
2

TOMPKINS COUNTY.

Founder. Beers, John E. Danby. (Retired list.)
Biggs, Chauncey P. Ithaca.
2

FOURTH OR WESTERN DISTRICT.

ALLEGANY COUNTY.

Barney, Herbert A. Belmont.
Witter, George H. Wellsville.

2

CATTARAUGUS COUNTY.

Sackrider, J. H. East Randolph.
Smith, A. Everett. Olean.

2

CHAUTAUQUA COUNTY.

Bemus, Morris N. Jamestown.
Bemus, William Marvin. Jamestown.
Blanchard, R. Newland. Jamestown.
Founder. Dean, Harmon J. Brocton.
Eastman, Henry A. Jamestown.
Moore, Macdonald. Fredonia.
Scofield, Earle A. Bemus Point.
Founder. Strong, Thomas D. Westfield.

8

ERIE COUNTY.

Baylis, Alfred W. Buffalo.
Bennett, Arthur G. Buffalo.
Original. Boies, Loren F. Buffalo.
Brown, George L. Buffalo.
Burghardt, Francis A. Buffalo. (Retired list.)
Burrows, Lorenzo, Jr. Buffalo.
Buswell, Henry C. Buffalo.
Cohen, Bernard. Buffalo.
Congdon, Charles E. Buffalo.
Cooke, Almon H. Buffalo.
Cott, George F. Buffalo.
Dayton, C. L. Buffalo. (Retired list.)
Original. Dorland, Elias T. Buffalo. (Retired list.)
Dunham, Sydney A. Buffalo.
Frederick, Carlton C. Buffalo.
Fronezak, Francis E. Buffalo.
Green, Stephen S. Buffalo.
Original. Greene, DeWitt C. Buffalo.
Original. Harrington, Devillo W. Buffalo.
Hayd, Herman E. Buffalo.
Himmelsbach, George A. Buffalo.
Howard, Charles F. Buffalo.
Founder. Hoyer, Frederick F. Tonawanda.

Hubbell, Alvin A. Buffalo.
Hunt, Howard L. Orchard Park.
Jackson, William H. Springville.
Jones, Allen A. Buffalo.
McFarlane, William A. Springville.
Millener, Frederick H. Buffalo.
Mooney, James J. Buffalo.
Phelps, William C. Buffalo.
Rochester, DeLancey. Buffalo.
Starr, Elmer G. Buffalo.
Stockton, Charles G. Buffalo.
Strong, Orville C. Colden.
Thornton, William H. Buffalo.
Trull, Hiram P. Williamsville.
Twohey, John J. Buffalo.
Wall, Charles A. Buffalo.
Founder. Wyckoff, Cornelius C. Buffalo.

40

GENESEE COUNTY.

Founder. Jackson, Albert P. Oakfield.
Palmer, William E. Le Roy.
Stone, Frank L. Le Roy.
Founder. Townsend, Morris W. Bergen.

4

LIVINGSTON COUNTY.

Brown, John P. Nunda.
Hagey, J. Moyer. Mount Morris.
Jones, George H. Fowlerville.
Original. Menzie, Robert J. Caledonia.
Original. Moyer, Frank H. Moscow.
Spratling, William P. Sonyea.

6

MONROE COUNTY.

Andrews, Lewis B. Rochester.
Curtis, Daniel F. Rochester.
Fenno, Henry M. Rochester.
Goler, George W. Rochester.
Founder. Hovey, Bleecker L. Rochester.
Jones, S. Case. Rochester.
Founder. Moore, Edward M. Rochester. (Retired list.)
Original. Moore, Edward M., Jr. Rochester.
Original. Moore, Richard Mott. Rochester.
Original. O'Hare, Thomas A. Rochester.

Reitz, Charles. Webster.
Snook, George M. Parma.
Stockschlaeder, Peter. Rochester.
13

NIAGARA COUNTY.

Eddy, George P. Lewiston.
Huggins, William Q. Sanborn.
Moore, Allen N. Lockport.
3

ONTARIO COUNTY.

Founder. Bentley, Francis R. Cheshire. (Retired list.)
De Laney, John Pope. Geneva.
Founder. Simmons, E. W. Canandaigua. (Retired list.)
Original. Vanderhoof, Frederick D. Phelps.
4

ORLEANS COUNTY.

Founder. Chapman, James. Medina.
Original. Taylor, John H. Holley.
Founder. Tompkins, H. C. Knowlesville (Retired list.)
3

STEUBEN COUNTY.

Chittenden, Daniel J. Addison.
Conderman, George. Hornellsville.
Gilbert, Horatio. Hornellsville.
Original. Jamison, John S. Hornellsville.
Parkill, Clair S. Hornellsville.
Walker, James E. Hornellsville.
Wallace, Edwin E. Jasper.
7

WAYNE COUNTY.

Founder. Arnold, J. Newton. Clyde.
Brandt, John S. Ontario Center.
Founder. Colvin, Darwin. Clyde.
Horton, David B. Red Creek.
Original. Landon, Newell E. Newark.
Nutten, Wilbur F. Newark.
6

WYOMING COUNTY.

Original. Ellenwood, A. G. Attica.
Greene, Cordelia A. Castile.
Hulette, Giles S. Arcade.

Lusk, Zera J. Warsaw.
Mann, Carl C. Warsaw.
Original. Palmer, George M. Warsaw.
Original. Rae, Robert. Portageville.
Truesdell, Gifford. Wyoming.
Wilson, M. Jean. Warsaw.
9

FIFTH OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

Atwood, John W. Fishkill-on-Hudson.
Baker, Benjamin N. Rhinebeck.
Original. Barnes, Edwin. Pleasant Plains.
Original. Bayley, Guy Carleton. Poughkeepsie.
Founder. Codding, George H. Amenia.
Original. Fletcher, Charles L. Wing Station.
Julian, John M. Pleasant Valley.
Founder. Leroy, Irving D. Pleasant Valley.
Founder. Pultz, Monroe T. Stanfordville.
Van Etten, Cornelius S. Rhinebeck.
10

NASSAU COUNTY.

Mott, Valentine. Roslyn.
Original. Rave, Edward G. Hicksville.
2

NEW YORK CITY.

Borough of Manhattan.

Adams, Calvin Thayer.
Alexander, Samuel.
Anderson, R. Harcourt.
Anderton, William B.
Original. Arcularius, Louis.
Arnold, Glover C.
Austin, David P.
Baldwin, Frederick A.
Bennett, Thomas L.
Original. Biggs, Hermann M.
Bissell, Joseph B.
Bozeman, Nathan G.
Original. Bryant, Joseph D.
Bryant, Percy.
Original. Bull, Charles Stedman.

Burtenshaw, James H.
Campbell, Clarence G.
Carr, William.
Original. Carter, Henry Skelton.
Original. Chauveau, Jean F.
Original. Chrystie, T. M. Ludlow.
Cocks, George H.
Coley, William B.
Founder. Conover, William S.
Cowles, Frederic S.
Curtis, G. Lenox.
Dalton, William R. I.
Davis, J. Griffith.
Davis, Robert C.
DeGarmo, William B.
Delphey, Eden V.
Dench, Edward B.
Original. Denison, Charles Ellery.
Original. Denison, Ellery.
Founder. Dennis, Frederic S.
Dodin, Henry A.
Dudley, A. Palmer.
Dunham, Edward K.
Original. Eastman, Robert W.
Einhorn, Max.
Original. Eliot, Ellsworth. (Retired list.)
Erdmann, John F.
Farrington, Joseph O.
Ferguson, Frank.
Founder. Flint, Austin.
Flint, Austin, Jr.
Fordyce, John A.
Foster, George V.
French, John Herndon.
Fridenberg, Edward.
Gibb, W. Travis.
Goldan, S. Ormond.
Gottlieb, J. Adelphi.
Founder. Gouley, John W. S.
Grad, Hermann.
Halsey, F. Spencer.
Hammond, Frederick Porter.
Harris, E. Eliot.
Original. Harrison, George Tucker.
Henry, Nelson H.
Hepburn, Neil J.

Hillis, Thomas J.
Founder. Hodgman, Abbott.
Holden, Timothy N.
Hope, George B.
Hubbard, Dwight L.
Huddleston, John H.
Jackson, Charles W.
Founder. Janeway, Edward G.
Janvrin, Joseph E.
Jenkins, William T.
Judson, Adoniram B.
Kalish, Richard.
Kelly, Thomas.
Kindred, John Joseph.
Knipe, George.
Knopf, S. Adolph.
Founder. Leale, Charles A.
Leale, Medwin.
Leszynsky, William M.
Lewis, Robert.
Lichtschein, Louis.
Little, Albert H.
Lockwood, Charles E.
Ludlow, Ogden C.
Lukens, Anna.
Lusk, William C.
Lynch, Patrick J.
MacGregor, James R.
Mackenzie, James C.
Founder. Manley, Thomas H.
Martindale, Francis E. (Retired list.)
Mason, Edwin Gaillard.
Maury, John W. Draper.
Mayer, Emil.
McAlpin, D. Hunter, Jr.
McBurney, Charles.
McNicholl, Thomas A.
Meding, Charles B.
Meier, Gottlieb C. H.
Meyer, Willy.
Milliken, Samuel E.
Original. Miranda, Ramon L.
Moran, James.
Founder. Murphy, John.
Murray, Peter.
Original. Murray, Sandford J.

	Myles, Robert C.
	Nammack, Charles E.
Founder.	Newman, Robert.
Founder.	Nicoll, Henry D.
Founder.	Oberndorfer, Isidor P.
	O'Brien, M. Christopher.
	Oppenheimer, Henry S.
	Oppenheimer, Seymour.
Original.	Parsons, John.
	Perry, John Gardner.
	Phelps, Charles.
Original.	Pooler, Hiram A. (Retired list.)
	Power, W. Bonamy.
Founder.	Purple, Samuel S.
	Quinlan, Francis J.
	Rathbone, Charles C.
	Reilly, Thomas F.
	Richard, Montrose R.
Founder.	Sayre, Lewis A.
	Sayre, Reginald H.
	Seaman, Louis L.
	Shaw, Henry B.
	Shrady, Arthur M.
Original.	Shrady, John.
	Shrady, John Eliot.
	Silver, Henry M.
	Simmons, Charles E.
	Smith, A. Alexander.
Original.	Smith, Samuel W.
Original.	Smith, Stephen.
	Spicer, Walter E.
	Stearns, Henry S.
	Stern, Heinrich.
	Stewart, Douglas H.
	Stewart, Francis E.
	Stewart, George D.
	Strong, Cyrus J.
	Syms, Parker.
	Terriberry, William S.
Founder.	Thomas, T. Gaillard.
	Thompson, Von Beverhout.
	Townsend, Wisner R.
	Trautman, Alex.
	Tucker, Alfred B.
Founder.	Tucker, Carlos P.
	Vincent, Ludger C.

Vineberg, Hiram N.
Wainwright, John W.
Waldo, Ralph.
Walsh, Simon J.
Wandless, Henry W.
Washburn, Wickes.
Watkins, Robert L.
Weston, Albert T.
White, J. Blake.
Founder. Wiener, Joseph.
Wiggin, Frederick Holme.
Woodend, William E.
Woodward, Julius H.
Original. Wyeth, John A.
Yankauer, Sidney.

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NEW YORK CITY—*Continued.*

BOROUGH OF BROOKLYN.

Alleman L. A. Welles.
Arrowsmith, Hubert.
Baker, Frank R.
Baldwin, L. Grant.
Bierwirth, Julius C.
Original. Biggam, William H.
Original. Brundage, Amos H. (Retired list.)
Brush, Arthur C.
Coffin, Lawrence.
Original. Conway, John Francis.
Essig, George.
Gildersleeve, Charles P.
Hicks, Edward E.
Hughes, Peter.
Hull, Thomas H.
Original. Jenkins, John A.
Jewett, Frederic A.
Little, Frank.
Original. Lloyd, T. Mortimer.
Original. McCollom, William. (Retired list.)
Milbury, Frank S.
Newman, George W.
Original. North, Nelson L.
O'Connell, Joseph F.
Ostrander, George A.
Page, Emmett D.

Original. Paine, Arthur R.
Parrish, John W.
Original. Pray, Susan R.
Price, Henry R.
Raynor, Frank C.
Richardson, John E.
Riggs, Herman C.
Risch, Henry F. W.
Rochester, Thomas M.
Founder. Rushmore, John D.
Original. Russell, William G.
Original. Shepard, A. Warner.
Original. Sizer, Nelson Buell.
Smith, Henry M.
Founder. Squibb, Edward H.
Founder. Squibb, Edward R.
Original. Steinke, Hermann C. O.
Sullivan, John D.
Waterman, James S.
Waterworth, William.
Waugh, Darwin W.
Wieber, Adolph.
Original. Williams, William H.
Wood, John Scott.
Woolworth, Earle E.
Founder. Wyckoff, Richard M.

52

BOROUGH OF RICHMOND.

Johnston, Henry C. New Brighton.
Walser, William C. West New Brighton.

2

ORANGE COUNTY.

Conner, Milton C. Middletown.
Dennis, Frank Wellington. Unionville.
Pillsbury, S. Burke. Middletown.
Swartwout, Henry B. Port Jervis.
Townsend, Charles E. Newburgh.
Woodhull, Edward D. Monroe.

6

PUTNAM COUNTY.

Founder. Murdock, George W. Cold Spring.
Founder. Young, William. Cold Spring. (Retired list.)

2

ROCKLAND COUNTY.

Bayley, Norman B. Haverstraw.

1

SUFFOLK COUNTY.

Original. Chambers, Martin L. Port Jefferson.
Gibson, William B. Huntington.
Hulse, William A. Bay Shore.
Original. Lindsay, Walter. Huntington.
Overton, Frank. Patchogue.

5

SULLIVAN COUNTY.

Croker, Edwin. Narrowsburg.
Payne, Charles S. Liberty.
Piper, Charles W. Wurtsboro.
Stearns, Benjamin W. Long Eddy.
Whitcomb, John L. C. Liberty.

5

ULSTER COUNTY.

Gage-Day, Mary. Kingston.
Original. HoornBeek, Philip Du Bois. Wawarsing. (Retired list.)
Original. Hühne, Frederick. Rondout.
Reed, Albert. Highland.
Original. Van Hoevenberg, Henry. Kingston.
Ward, John J. Ellenville.

6

WESTCHESTER COUNTY.

Acker, Thomas J. Croton-on-Hudson.
Original. Banks, George B. Hartsdale. (Retired list.)
Original. Brush, Edward F. Mount Vernon.
Original. Coutant, Richard B. Tarrytown.
Granger, William D. Bronxville.
Porteous, J. Lindsay. Yonkers.
Sands, Benjamin J. Port Chester.
Sands, Norton J. Port Chester.
Original. Schmid, H. Ernst. White Plains.
Small, John W. North Tarrytown.
Original. Wells, William L. New Rochelle.

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SUMMARY OF FELLOWSHIP BY DISTRICTS.

First District	43
Second District	102
Third District	73
Fourth District	107
Fifth District	270
Non-residents	16
Total Fellowship	611
Non-residents now on Retired list	5
	616

ALPHABETICAL LIST OF FELLOWS.

Aberdein, Robert, Warren and Fayette Sts., Syracuse, Onondaga Co. Original.
Abrams, Hiram C., Newtonville, Albany Co.
Acker, Thomas J., Croton-on-Hudson, Westchester Co.
Adams, Calvin Thayer, 21 E. 28th St., New York, New York Co.
Alexander, Samuel, 5 W. 58th St., New York, New York Co.
Alleman, L. A. Welles, 64 Montague St., Brooklyn, Kings Co.
Allen, Charles S., Greenbush, Rensselaer Co. Founder.
Allen, Henry J., Corinth, Saratoga Co.
Allen, William L., Greenbush, Rensselaer Co.
Ames, Edward, 123 E. Lovell St., Kalamazoo, Mich. Founder. (Non-resident.)
Anderson, R. Harcourt, 108 W. 40th St., New York, New York Co.
Anderton, William B., 34 W. 47th St., New York, New York Co.
Andrews, Lewis B., 560 E. Main St., Rochester, Monroe Co.
Arcularius, Louis, 121 E. 25th St., New York, New York Co. Original.
Arnold, Edmund S. F., Carroll Avenue, Newport, R. I. Original. (Retired list.)
Arnold, Glover C., 115 E. 30th St., New York, New York Co.
Arnold, J. Newton, Clyde, Wayne Co. Founder.
Arrowsmith, Hubert, 32 Schermerhorn St., Brooklyn, Kings Co.
Atwood, John W., Fishkill-on-Hudson, Dutchess Co.
Austin, David P., 12 W. 95th St., New York, New York Co.
Ayer, Warren L., Owego, Tioga Co. Original.
Ayres, Douglas, Fort Plain, Montgomery Co. Original.
Ayling, William J., 606 E. Fayette St., Syracuse, Onondaga Co.
Bacon, Charles G., Fulton, Oswego Co. (Retired list.)
Bagg, Moses M., Utica, Oneida Co., Original. (Retired list.)
Bailey, Theodore P., 95 Eagle St., Albany, Albany Co. Founder.
Baker, Benjamin N., Rhinebeck, Dutchess Co.
Baker, Frank R., 540 Bedford Ave., Brooklyn, Kings Co.
Baldwin, Frederick A., 129 W. 77th St., New York, New York Co.
Baldwin, L. Grant, 28 Schemerhorn St., Brooklyn, Kings Co.
Banks, George B., Hartsdale, Westchester Co. Original. (Retired list.)
Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.
Barney, Herbert A., Belmont, Allegany Co.
Barton, Lyman G., Willsborough, Essex Co.
Bates, Nelson W., Central Square, Oswego Co. (Retired list.)
Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.
Bayley, Norman Brigham, Haverstraw, Rockland Co.

Bayliss, Alfred W., 592 Spring St., Buffalo, Erie Co.
Baynes, Joseph E., 2419 5th Ave., Troy, Rensselaer Co.
Beers, John E., Danby, Tompkins Co. Founder. (Retired list.)
Bellows, George A., Waterloo, Seneca Co.
Bemus, Morris N., Jamestown, Chautauqua Co.
Bemus, William Marvin, Jamestown, Chautauqua Co.
Bennett, Arthur G., 191 Delaware Ave., Buffalo, Erie Co.
Bennett, Thomas L., 7 E. 87th St., New York, New York Co.
Bentley, Francis R., Cheshire, Ontario Co. Founder. (Retired list.)
Bierwirth, Julius C., 137 Montague St., Brooklyn, Kings Co.
Biggam, William H., 1197 Dean St., Brooklyn, Kings Co. Original.
Biggs, Chauncey P., Ithaca, Tompkins Co.
Biggs, Hermann M., 5 W. 58th St., New York, New York Co. Original.
Birdsall, Gilbert, North Brookfield, Madison Co. Original.
Bissell, James H., 2187 5th Ave., Troy, Rensselaer Co.
Bissell, Joseph B., 15 W. 58th St., New York, New York Co.
Blair, Louis P., McDonough, Chenango Co. Original.
Blanchard, R. Newland, Jamestown, Chautauqua Co.
Boies, Loren F., 286 Norwood Ave., Buffalo, Erie Co. Original.
Bonesteel, Howard F., 1 Erie St., Troy, Rensselaer Co.
Bonesteel, William N., 21 1st St., Troy, Rensselaer Co. Founder. (Retired list.)
Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co. Original.
Bozeman, Nathan G., 140 Madison Ave., New York, New York Co.
Bradford, George D., Homer, Cortland Co.
Bradley, O. Howard, Hudson, Columbia Co.
Braman, Harry S., Homer, Cortland Co.
Brandt, John S., Ontario Center, Wayne Co.
Brooks, Leroy J., Norwich, Chenango Co. Original.
Brown, George L., D. S. Morgan Building, Buffalo, Erie Co.
Brown, John P., Nunda, Livingston Co.
Brown, Ulysses H., 312 Warren St., Syracuse, Onondaga Co.
Brundage, Amos H., 609 Madison St., Brooklyn, Kings Co. Original. (Retired list.)
Brush, Arthur C., 11 Lafayette Ave., Brooklyn, Kings Co.
Brush, Edward F., Mount Vernon, Westchester Co. Original.
Bryant, Joseph D., 54 W. 36th St., New York, New York Co. Original.
Bryant, Percy, Manhattan State Hospital, Ward's Island, New York, New York Co.
Bull, Charles Steadman, 47 W. 36th St., New York, New York Co. Original.
Bullard, Thomas E., Schuylerville, Saratoga Co.
Burbeck, Chas. H., 91 First St., Troy, Rensselaer Co. Founder.
Burghardt, Francis Augustus, 632 Elm St., Buffalo, Erie Co. (Retired list.)

Burhyte, Orlando W., Brookfield, Madison Co.
Burrows, Lorenzo Jr., 482 Franklin St., Buffalo, Erie Co.
Burtenshaw, James H., 381 West End Ave., New York, New York Co.
Buswell, Henry C., 868 Main St., Buffalo, Erie Co.
Cady, George M., Nichols, Tioga Co.
Cahill, John T., Hoosick Falls, Rensselaer Co.
Campbell, Alexander J., 332 Warren St., Syracuse, Onondaga Co.
Campbell, Clarence G., 34 E. 49th St., New York, New York Co.
Carpenter, Eugene H., 13 Cherry St., Oneida, Madison Co.
Carpenter, Henry W., Oneida, Madison Co. Original.
Carr, William, 35 W. 46th St., New York, New York Co.
Carter, Henry S., 130 E. 24th St., New York, New York Co. Original.
Cavana, Martin, 70 Madison St., Oneida, Madison Co.
Chambers, Martin L., Port Jefferson, Suffolk Co. Original.
Chapman, James, Medina, Orleans Co. Founder.
Chauveau, Jean F., 31 W. 60th St., New York, New York Co. Original.
Chittenden, Daniel J., Addison, Steuben Co.
Chittenden, Joseph H., Binghamton, Broome Co. Founder.
Chrystie, T. M. Ludlow, 361 W. 57th St., New York, New York Co. Original.
Church, George T., 12 E. Van Dam St., Saratoga Springs, Saratoga Co.
Church, Thomas C., Valley Falls, Rensselaer Co.
Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co. (Retired list.)
Clark, George W., Waterloo, Seneca Co.
Cocks, George H., 1986 Madison Ave., New York, New York Co.
Codding, George H., Amenia, Dutchess Co. Founder.
Coffin, Lawrence, 473 Bedford Ave., Brooklyn, Kings Co.
Cohen, Bernard, 497 Niagara St., Buffalo, Erie Co.
Coley, William B., 5 Park Ave., New York, New York Co.
Colvin, Darwin Clyde, Wayne Co. Founder.
Comstock, George F., Saratoga Springs, Saratoga Co. Founder.
Conderman, George, Hornellsville, Steuben Co.
Congdon, Charles E., 1034 Jefferson St., Buffalo, Erie Co.
Conner, Milton C., Middletown, Orange Co.
Conover, William S., 240 W. 132d St., New York, New York Co. Founder.
Conway, John Francis, 315 Buffalo Ave., Brooklyn, Kings Co. Original.
Cooke, Almon H., 410 Ashland Ave., Buffalo, Erie Co.
Cooley, Frank L., 193 W. First St., Oswego, Oswego Co.
Cooley, R. N., Hannibal Centre, Oswego Co.
Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.
Cott, George F., 531 Mooney-Brisbane Bldg., Buffalo, Erie Co.
Coutant, Richard B., Tarrytown, Westchester Co. Original.
Cowles, Frederic S., 204 W. 133d St., New York, New York Co.

Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.
Crocker, Edwin, Narrowsburg, Sullivan Co.
Crombie, Walter C., Mechanicville, Saratoga Co. Original.
Crosby, Alexander H., Lowville, Lewis Co.
Crothers, Thomas D., Hartford, Conn. (Non-resident.)
Crounse, Andrew C., Melrose, Rensselaer Co.
Curtis, Daniel F., 96 South Ave., Rochester, Monroe Co.
Curtis, G. Lenox, 7 W. 58th St., New York, New York Co.
Curtis, Pierson C., Round Lake, Saratoga Co.
Dalton, William R. Inge, 101 Convent Ave., New York, New York Co.
D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
Davis, J. Griffith, 118 W. 13th St., New York, New York Co.
Davis, Robt. C., 150 E. 128th St., New York, New York Co.
Dayton, C. L., 246 Dearborn St., Buffalo, Erie Co. (Retired list.)
Dean, Harmon J., Brocton, Chautauqua Co. Founder.
DeGarmo, William B., 56 W. 36th St., New York, New York Co.
DeLandeta, Juan B., No. 62 San Miguel, Havana, Cuba. (Non-resident.)
DeLaney, John Pope, Geneva, Ontario Co.
Delphey, Eden V., 404 W. 57th St., New York, New York Co.
Dench, Edward B., 17 W. 46th St., New York, New York Co.
Denison, Charles Ellery, 68 W. 71st St., New York, New York Co. Original.
Denison, Ellery, 113 W. 12th St., New York, New York Co. Original.
Dennis, Frank Wellington, Unionville, Orange Co.
Dennis, Frederic S., 542 Madison Ave., New York, New York Co. Founder.
De Witt, Byron, Oswego, Oswego Co. Original. (Retired list.)
Dickinson, Melville D., 6 St. Paul's Place, Troy, Rensselaer Co.
Didama, Emory A., Cortland, Cortland Co.
Didama, Henry D., 424 S. Salina St., Syracuse, Onondaga Co. Founder.
Dodge, Amos P., Oneida Castle, Oneida Co.
Dodge, Lyndhurst C., Rouse's Point, Clinton Co. Founder.
Dodin, Henry A., 1194 Washington Ave., New York, New York Co.
Donohue, Florince O., 314 Clinton St., Syracuse, Onondaga Co. Original.
Dorland, Elias T., 388 Elmwood Ave., Buffalo, Erie Co. Original. (Retired list.)
Douglas, Edgar H., Little Falls, Herkimer Co.
Douglass, James W., Brooneville, Oneida Co.
Drake, Frank C., Oneida, Madison Co.
Drake, James B., Hancock, Delaware Co.
Dudley, A. Palmer, 678 Madison Ave New York, New York Co.
Dudley, Dwight, Maine, Broome Co.
Dunham, Edward K., 338 E. 26th St., New York, New York Co.
Dunham, Sydney A., 180 W. Chippewa St., Buffalo, Erie Co.

Eastman, Henry A., Jamestown, Chautauqua Co.
Eastman, Robert W., 140 W. 76th St., New York, New York Co. Original.
Eddy, George P., Lewiston, Niagara Co.
Edwards, Amos S., 1506 N. Salina St., Syracuse, Onondaga Co. Original.
Edwards, George A., 204 E. Jefferson St., Syracuse, Onondaga Co. Original.
Edwards, John, Gloversville, Fulton Co.
Einhorn, Max, 20 E. 63d St., New York, New York Co.
Eldridge, Stuart, Yokohama, Japan. (Non-resident.)
Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original. (Retired list.)
Ellenwood, A. G., Attica, Wyoming Co. Original.
Enders, Thomas Burnham, Highland St., Hartford, Conn. (Non-resident.)
Erdmann, John F., 149 W. 44th St., New York, New York Co.
Essig, George, 488 Bedford Ave., Brooklyn, Kings Co.
Farnham, LeRoy D., Binghamton, Broome Co.
Farrington, John M., 11 Jay St., Binghamton, Broome Co.
Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
Fenno, Henry Marshall, 34 Hamilton Place, Rochester, Monroe Co.
Ferguson, Everard D., 1 Union Place, Troy, Rensselaer Co. Founder.
Ferguson, Frank, 20 W. 38th St., New York, New York Co.
Fielding, Frederick G., 70 Ridge St., Glens Falls, Warren Co.
Finder, William Jr., 2 Union Place, Troy, Rensselaer Co. Founder.
Fisher, John C., Elmira, Chemung Co.
FitzGerald, David J., Glens Falls, Warren Co.
FitzGerald, John F., State Custodial Asylum, Rome, Oneida Co.
Fletcher, Charles L., Wing Station, Dutchess Co. Original.
Flint, Austin, 60 E. 34th St., New York, New York Co. Founder.
Flint, Austin, Jr., 18 E. 45th St., New York, New York Co.
Flint, William H., Ridgefield, Conn. Founder. (Retired list.)
Fordyce, John A., 66 Park Ave., New York, New York Co.
Foster, George V., 109 E. 18th St., New York, New York Co.
Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.
French, John Herndon, 43 W. 51st St., New York, New York Co.
French, Salphronius H., 40 Church St., Amsterdam, Montgomery Co.
Fridenberg, Edward, 242 Lenox Ave., New York, New York Co.
Fritts, Crawford Ellsworth, Hudson, Columbia Co.
Fronezak, Francis E., 508 Fillimore Ave., Buffalo, Erie Co.
Gage-Day, Mary, Kingston, Ulster Co.
Garlock, William D., Little Falls, Herkimer Co.
Getty, Andrew H., Athens, Greene Co.
Gibb, W. Travis, 55 W. 38th St., New York, New York Co.
Gibson, William B., Huntington, Suffolk Co.

Gilbert, Horatio, Hornellsville, Steuben Co.
Gildersleeve, Charles P., 35 Shermerhorn St., Brooklyn, Kings Co.
Glidden, Charles H., Little Falls, Herkimer Co. Original.
Goldan, S. Ormond, 225 W. 45th St., New York, New York Co.
Goler, George W., 127 East Ave., Rochester, Monroe Co.
Gordinier, Hermon C., 89 4th St., Troy, Rensselaer Co.
Gottlieb, J. Adelphi, 304 W. 104th St., New York, New York Co.
Gouley, John W. S., 11 E. 43d St., New York, New York Co. Founder.
Gow, Frank F., Schuylerville, Saratoga Co.
Grad, Hermann, 149 E. 116th St., New York, New York Co.
Granger, William D., Bronxville (Vernon House), Westchester Co.
Gravatt, Edwin J., 361 Second St., Troy, Rensselaer Co.
Green, Stephen S., 326 Niagara St., Buffalo, Erie Co.
Greene, Clark W., Binghamton, Broome Co.
Greene, Cordelia A., Castile, Wyoming Co.
Greene, DeWitt C., 1125 Main St., Buffalo, Erie Co. Original.
Greenman, C. Edgar, 575 1st St., Troy, Rensselaer Co.
Guy, James D., Chenango Forks, Broome Co.
Hagey, J. Moyer, Mount Morris, Livingston Co.
Halsey, F. Spencer, 123 W. 69th St., New York, New York Co.
Hammond, Frederick P., 129 E. 116th St., New York, New York Co.
Hannan, James C., Hoosick Falls, Rensselaer Co. Founder.
Hannan, Thomas H., Hoosick Falls, Rensselaer Co.
Harrington, Devillo W., 1430 Main St., Buffalo, Erie Co. Original.
Harris, E. Eliot, 33 W. 93d St., New York, New York Co.
Harrison, George Tucker, 221 W. 23d St., New York, New York Co. Original.
Harvie, John B., 6 Clinton Place, Troy, Rensselaer Co. Founder.
Hayd, Herman E., 493 Delaware Ave., Buffalo, Erie Co.
Hayes, William E., Frankfort, Herkimer Co.
Haynes, John U., 103 Mohawk St., Cohoes, Albany Co.
Head, Adelbert D., 202 W. Genesee St., Syracuse, Onondaga Co. Founder.
Heatly, John Alexander, 208 Centre St., Schenectady, Schenectady Co.
Heimstreet, Thomas B., 14 Division St., Troy, Rensselaer Co. Original.
Hendrick, Henry C., McGrawville, Cortland Co. Founder.
Henning, Thomas I., Glens Falls, Warren Co.
Henry, Nelson H., 14 E. 10th St., New York, New York Co.
Hepburn, Neil J., 317 W. 23d St., New York, New York Co.
Hicks, Edward E., 921a Jefferson Ave., Brooklyn, Kings Co.
Higgins, Frank W., Cortland, Cortland Co.
Hillis, Thomas J., 51 Charlton St., New York, New York Co.
Himmelsbach, George A., 137 W. Tupper St., Buffalo, Erie Co.

Hodgman, Abbott, 141 E. 38th St., New York, New York Co. Founder.
Hogeboom, Wm. L., 2183 5th Ave., Troy, Rensselaer Co.
Holden, Timothy N., 294 E. Broadway, New York, New York Co.
HoornBeek, Philip Du Bois, Wawarsing, Ulster Co., Original. (Retired list.)
Hope, George B., 133 W. 72d St., New York, New York Co.
Horton, David B., Red Creek, Wayne Co.
Hough, Frank P., 87 Oak St., Binghamton, Broome Co.
Houston, David W., 18 2d St., Troy, Rensselaer Co. Original.
Hovey, Bleecker L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.
Howard, Charles F., 1458 Main St., Buffalo, Erie Co.
Hoyer, Frederick F., Tonawanda, Erie Co. Founder.
Hubbard, Dwight, L., 117 W. 93d St., New York, New York Co.
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.
Huddleston, John H., 126 W. 85th St., New York, New York Co.
Hudson, George, Stillwater, Saratoga Co.
Huggins, William Q., Sanborn, Niagara Co.
Hughes, Peter, 136 S. 9th St., Brooklyn, Kings Co.
Hulette, Giles S., Arcade, Wyoming Co.
Hühne, Frederick, Rondout, Ulster Co. Original.
Hull, Thomas H., 55 Lee Ave., Brooklyn, Kings Co.
Hulse, Willliam A., Bay Shore, Suffolk Co.
Humphrey, John F., 58 Phila. St., Saratoga Springs, Saratoga Co.
Hunt, Howard L., Orchard Park, Erie Co.
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original
Hunt, William J., Glens Falls, Warren Co.
Huntley, James F., Oneida, Madison Co.
Hutton, Matthew B., Valley Falls, Rensselaer Co.
Inlay, Erwin G., Salix, Iowa. (Non-resident.)
Jackson, Albert P., Oakfield, Genesee Co. Founder.
Jackson, Charles W., 130 W. 81st St., New York, New York Co.
Jackson, William H., Springville, Erie Co.
Jamison, John S., Hornellsville, Steuben Co. Original.
Janeway, Edward G., 36 W. 40th St., New York, New York Co. Founder.
Janvrin, Joseph E., 191 Madison Ave., New York, New York Co.
Jenkins, John A., 271 Jefferson Ave., Brooklyn, Kings Co.. Original
Jenkins, William T., 17 State St., New York, New York Co.
Jewett, Frederic A., 282 Hancock St., Brooklyn, Kings Co.
Jewett, Homer O., Cortland, Cortland Co. Founder. (Retired list.)
Johnson, Henry W., Hudson, Columbia Co.
Johnson, Ianthus G., Greenfield Center, Saratoga Co. Original.
Johnson, Parley H., Adams, Jefferson Co. Original.
Johnson, Richard G., Amsterdam, Montgomery Co. Original.

Johnston, Henry C., 10 Central Ave., New Brighton, Richmond Co.
Jones Allen A., 436 Franklin St., Buffalo, Erie Co.
Jones, George H., Fowlerville, Livingston Co.
Jones S. Case, 1 East Ave., Rochester, Monroe Co.
Joslin, Albert A., Watertown, Jefferson Co.
Judson, Adoniram B., 1 Madison Ave., New York, New York Co.
Julian, John M., Pleasant Valley, Dutchess Co.
Kalish, Richard, 36 W. 47th St., New York, New York Co.
Keefer, Charles W., Mechanicville, Saratoga Co.
Kelly, Thomas, 357 W. 57th St., New York, New York Co.
Kenyon, Frank, Scipio, Cayuga Co.
Kindred, John Joseph, 1125 Madison Ave., New York, New York Co.
King, James K., Watkins, Schuyler Co.
Kittell, Martin M., Kinderhook, Columbia Co.
Klock, Charles M., St. Johnsville, Montgomery Co.
Knapp, William H., Binghamton, Broome Co.
Kneeland, Jonathan S., Onondaga, Onondaga Co. Founder (Retired list.)
Knipe, George, 353 W. 24th St., New York, New York Co.
Kniskern, Albert C., Mechanicville, Saratoga Co.
Knopf, S. Adolph, 16 W. 95th St., New York, New York Co.
LaBell, Martin J., Lewis, Essex Co. Original.
Lambert, John, Salem, Washington Co. (Retired list.)
Landon, Newell E., Newark, Wayne Co. Original.
Leale, Charles A., 604 Madison Ave., New York, New York Co. Founder.
Leale, Medwin, 604 Madison Ave., New York, New York Co.
Leaning, John K., Cooperstown, Otsego Co. Founder.
LeRoy, Irving D., Pleasant Valley, Dutchess Co. Founder.
Lester, Elias, Seneca Falls, Seneca Co. Founder.
Leszynsky, Wm. M., 56 E. 58th St., New York, New York Co.
Lewis, LeRoy, Auburn, Cayuga Co.
Lewis, Robert, 48 W. 40th St., New York, New York Co.
Lichtschein, Louis, 653 Lexington Ave., New York, New York Co.
Lindsay, Walter, Huntington, Suffolk Co. Original.
Little, Albert H., 230 W. 43d St., New York, New York Co.
Little, Frank, 114 Montague St., Brooklyn, Kings Co.
Lloyd, T. Mortimer, 125 Pierrepont St., Brooklyn, Kings Co. Original.
Lockwood, Charles E., 60 W. 38th St., New York, New York Co.
Lockwood, Jordan W., Philmont, Columbia Co. Original.
Lounsberry, Robert L., Binghamton, Broome Co.
Ludlow, Ogden C., 2309 7th Ave., New York, New York Co.
Lukens, Anna, 1068 Lexington Ave., New York, New York Co.
Lusk, William C., 47 E. 34th St., New York, New York Co.

Lusk, Zera J., Warsaw, Wyoming Co.
Lyman, Henry C., Sherburne, Chenango Co. Original.
Lynch, Patrick J., 216 E. 13th St., New York, New York Co.
Lyon, Emory M., Plattsburg, Clinton Co. Founder.
Lyon, George E., Planter's Hotel, St. Louis, Mo. Original. (Non-resident.)
Lyons, Edward L., 298 4th St., Troy, Rensselaer Co.
Macfarlane, William A., Springville, Erie Co.
MacGregor, James R., 1111 Madison Ave., New York, New York Co.
Mackenzie, James C., 432 W. 22d St., New York, New York Co.
MacLaren, William Stevenson, Litchfield, Conn. (Non-resident.)
Manley, Thomas H., 115 W. 49th St., New York, New York Co. Founder.
Mann, Carl C., Warsaw, Wyoming Co.
Marsden, William R., 175 Columbia St., Utica, Oneida Co.
Marsh, James P., 1828 5th Ave., Troy, Rensselaer Co.
Martin, John H., Otego, Otsego Co. Original.
Martindale, Francis E., 456 Manhattan Ave., New York, New York Co. (Retired list.)
Martine, Godfrey R., Glens Falls, Warren Co. Original.
Mason, Edwin Gaillard, 213 W. 79th St., New York, New York Co.
Maury, John W. Draper, 105 W. 74th St., New York, New York Co.
Mayer, Emil, 25 E. 77th St., New York, New York Co.
McAlpin, D. Hunter, Jr., 9 E. 55th St., New York, New York Co.
McBurney, Charles, 28 W. 37th St., New York, New York Co.
McCollom, William, 195 Lefferts Place, Brooklyn, Kings Co. Original. (Retired list.)
McDonald, George E., Schenectady, Schenectady Co. Original.
McGann, Thomas, Wells, Hamilton Co.
McGauran, George D., Lawrence, Mass. (Non-resident.)
McNicholl, Thomas A., 1919 7th Ave., New York, New York Co.
Meding, Charles B., 157 W. 123d St., New York, New York Co.
Meier, Gottlieb C. H., 347 Manhattan Ave., New York, New York Co.
Menzie, Robert J., Caledonia, Livingston Co. Original.
Meyer, George L., Stone Arabia, Montgomery Co.
Meyer, Willy, 700 Madison Ave., New York, New York Co.
Milbury, Frank S., 215 Jefferson Ave., Brooklyn, Kings Co.
Millener, Frederick H., 5 N. Pearl St., Buffalo, Erie Co.
Milliken, Sam. E., 640 Madison Ave., New York, New York Co.
Miranda, Ramon L., 116 W. 64th St., New York, New York Co. Original.
Montgomery, John J., Luzerne, Warren Co.
Montmarquet, Joseph D., Cohoes, Albany Co.
Mooney, James J., 393 7th St., Buffalo, Erie Co.
Moore, Allen N., Lockport, Niagara Co.

Moore, Edward M., 74 S. Fitzhugh St., Rochester, Monroe Co. Founder. (Retired list.)
Moore, Edward M., Jr., 74 S. Fitzhugh St., Rochester, Monroe Co. Original.
Moore, Macdonald, Fredonia, Chautauqua Co.
Moore, Richard Mott, 74 S. Fitzhugh St., Rochester, Monroe Co. Original.
Moran, James, 333 W. 51st St., New York, New York Co.
Morehouse, Edgar W., 199 2d St., Troy, Rensselaer Co.
Moriarta, Douglas C., 511 Broadway, Saratoga Springs, Saratoga Co.
Morrow, William B., Walton, Delaware Co.
Mott, Valentine, Roslyn, Nassau Co.
Moyer, Frank H., Moscow, Livingston Co. Original.
Muir, William Scott, Truro, Nova Scotia. (Non-resident.)
Munger, Charles, Knoxborough, Oneida Co.
Murdock, George W., Cold Spring, Putnam Co. Founder.
Murphy, Grace A., 192 Third St., Troy, Rensselaer Co.
Murphy, John, 233 E. 35th St., New York, New York Co. Founder.
Murray, Peter, 157 W. 71st St., New York, New York Co.
Murray, Sanford J., 133 W. 87th St., New York, New York Co. Original.
Myles, Robert C., 46 W. 38th St., New York, New York Co.
Nammack, Charles E., 42 E. 29th St., New York, New York Co.
Newman, George W., 234 Leonard St., Brooklyn, Kings Co.
Newman, Robert, 148 W. 73d St., New York, New York Co. Founder.
Nichols, Calvin E., 25 1st St., Troy, Rensselaer Co. Founder.
Nichols, William H., West Sand Lake, Rensselaer Co. Founder.
Nicoll, Henry D., 51 E. 57th St., New York, New York Co. Founder.
Nold, John B., 165 North Ave., Utica, Oneida Co. (Retired list.)
North, Nelson L., 627 Bedford Ave., Brooklyn, Kings Co. Original.
Nutten, Wilbur F., Newark, Wayne Co.
Oberndorfer, Isidor P., 1037 Lexington Ave., New York, New York Co. Founder
O'Brien, M. Christopher, 161 W. 122d St., New York, New York Co.
O'Connell, Joseph F., 159 Remsen St., Brooklyn, Kings Co.
O'Hare, Thomas A., 97 State St., Rochester, Monroe Co. Original.
Oppenheimer, Henry S., 16 E. 32d St., New York, New York Co.
Oppenheimer, Seymour, 706 Madison Ave., New York, New York Co.
Orton, John G., Binghamton, Broome Co. Founder.
Ostrander, George A., 61 Greene Ave., Brooklyn, Kings Co.
Overton, Frank, Patchogue, Suffolk Co.
Packer, Thurston G., Smyrna, Chenango Co.
Page, Emmett D., 304 Washington Ave., Brooklyn, Kings Co.
Paine, Arthur R., 99 Lafayette Ave., Brooklyn, Kings Co. Original.

Palmer, Frank A., Mechanicville, Saratoga Co.
Palmer, George M., Warsaw, Wyoming Co. Original.
Palmer, Henry C., 253 Genesee St., Utica, Oneida Co.
Palmer, William E., LeRoy, Genesee Co.
Parent, Joseph S., Birchton, Saratoga Co.
Parkhill, Clair S., Hornellsville, Steuben Co.
Parrish, John W., 111 Montague St., Brooklyn, Kings Co.
Parsons, Israel, Marcellus, Onondaga Co. Founder.
Parsons, John, 2880 Bailey Ave., New York, New York Co. Original.
Payne, Charles S., Liberty, Sullivan Co.
Perry, John Gardner, 48 E. 34th St., New York, New York Co.
Phelan, Michael F., 339 Congress St., Troy, Rensselaer Co.
Phelps, Charles, 34 W. 37th St., New York, New York Co.
Phelps, Robert H., Norwich, Chenango Co.
Phelps, William C., 146 Allen St., Buffalo, Erie Co.
Pillsbury, S. Burke, Middletown, Orange Co.
Piper, Charles W., Wurtsboro, Sullivan Co.
Pomeroy, Nelson Asa, Waterbury, Conn. (Non-resident.)
Pooler, Hiram A., 34 Gramercy Park, New York, New York Co. Original. (Retired list.)
Porteous J. Lindsay, 83 Warburton Ave., Yonkers, Westchester Co.
Porter, Harry N., 1910 Harewood Ave., Washington D. C. Founder. (Retired list.)
Power, W. Bonamy, 40 W. 35th St., New York, New York Co.
Pray, Susan R., 139 South 9th St., Brooklyn, Kings Co. Original.
Price, Henry R., 485 Franklin Ave., Brooklyn, Kings Co.
Pultz, Monroe T., Stanfordville, Dutchess Co. Founder.
Purple, Samuel S., 36 W. 22d St., New York, New York Co. Founder.
Putnam, Frederick W., Binghamton, Broome Co. Founder.
Quinlan, Francis J., 33 W. 38th St., New York, New York Co.
Rae, Robert, Portageville, Wyoming Co. Original.
Rathbone, Charles C., 60 W. 47th St., New York, New York Co.
Rave, Edward G., Hicksville, Nassau Co. Original.
Raynor, Frank C., 66 Livingston St., Brooklyn, Kings Co.
Reed, Albert, Highland, Ulster Co.
Reese, Frank D., Cortland, Cortland Co.
Reid, Christopher C., Rome, Oneida Co.
Reid, William B., Rome, Oneida Co.
Reilly, Thomas F., 318 W. 141st St., New York, New York Co.
Reitz, Charles, Webster, Monroe Co.
Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.
Richard, Montrose R., 77 E. 116th St., New York, New York Co.
Richards, Seymour S., Frankfort, Herkimer Co.
Richardson, John E., 127 S. Oxford St., Brooklyn, Kings Co.

Ricketts, Benjamin M., 137 Broadway, Cincinnati, O. Original. (Non-resident.)
Riggs, Herman C., 117 Montague St., Brooklyn, Kings Co.
Risch, Henry F. W., 521 3d St., Brooklyn, Kings Co.
Ritter, F. Horace S., Elmira, Chemung Co.
Rochester, DeLancey, 469 Franklin St., Buffalo, Erie Co.
Rochester, Thomas M., 326 De Kalb Ave., Brooklyn, Kings Co.
Rousseau, Zotique, 17 2d St., Troy, Rensselaer Co. Founder.
Rushmore, John D., 129 Montague St., Brooklyn, Kings Co. Founder.
Russell, Charles P., 198 Genesee St., Utica, Oneida Co.
Russell, William G., 27 McDonough St., Broklyn, Kings Co. Original.
Sabine, Wm. B., 1425 Broadway, Watervliet, Albany Co. Founder.
Sackrider, J. H., East Randolph, Cattaraugus Co.
Sands, Benjamin J., Port Chester, Westchester Co.
Sands, Norton J., Port Chester, Westchester Co.
Santry, Augustus B., Little Falls, Herkimer Co.
Sayre, Lewis A., 285 5th Ave., New York, New York Co. Founder.
Sayre, Reginald H., 285 5th Ave., New York, New York Co.
Schmid, H. Ernst, White Plains, Westchester Co. Original.
Scofield, Earle A., Bemus Point, Chautauqua Co.
Scully, Thomas P., 109 E. Dominick St., Rome, Oneida Co.
Seaman, Louis L., 18 W. 31st St., New York, New York Co.
Segur, Avery, care of Brown, Shipley & Co., London, England. Founder. (Retired list.)
Selden, Robert, Catskill, Greene Co. Original.
Seymour, Wm. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.
Shaw, Henry B., 21 E. 127th St., New York, New York Co.
Sheffield, J. Wesley, 27½ Arthur St., Binghamton, Broome Co.
Shepard, A. Warner, 126 Willoughby St., Brooklyn, Kings Co. Original.
Sherer, John D., Waterford, Saratoga Co. Original.
Sherman, Frank J., Ballston, Saratoga Co.
Shrady, Arthur M., 1 W. 68th St., New York. New York Co.
Shrady, John, 140 W. 126th St., New York, New York Co. Original.
Shrady, John Eliot, 140 W. 126th St., New York, New York Co.
Silver, Henry M., 5 E. 43d St., New York, New York Co.
Simmons, Charles E., 762 Madison Ave., New York, New York Co.
Simmons, E. W., Canandaigua, Ontario Co. Founder. (Retired list.)
Simons, Frank E., Canajoharie, Montgomery Co.
Sizer, Nelson Buell, 336 Greene Ave., Brooklyn, Kings Co. Original.
Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original. (Retired list.)
Small, John W., North Tarrytown, Westchester Co.
Smelzer, Baxter T., Montour Falls, Schuyler Co. Original.
Smith, A. Alexander, 8 W. 47th St., New York, New York Co.

Smith, A. Everett, Olean, Cattaraugus Co.
Smith, Fletcher A., Corinth, Saratoga Co.
Smith, Frederick A., 3 Clinton Place, Troy, Rensselaer Co.
Smith, H. Lyle, Hudson, Columbia Co. Original.
Smith, Henry M., 64 Montague St., Brooklyn, Kings Co.
Smith, Homer Erastus, Norwich, Chenango Co.
Smith, Samuel L., Smithville Flats, Chenango Co.
Smith, Samuel W., Hotel San Remo, W. 75th St., New York, New York Co. Original.
Smith, Stephen, 640 Madison Ave., New York, New York Co. Original.
Snook, George M., Parma, Monroe Co.
Southworth, Richmond Joseph, 1220 36th St., N. W., Washington, D. C. Original. (Retired list.)
Spence, Henry, 512 Bergen Ave., Jersey City, N. J. (Non-resident.)
Spicer, Walter E., 62 Charlton St., New York, New York Co.
Spratling, Wm. P., Sonyea, Livingston Co.
Squibb, Edward H., 148 Columbia Heights, Brooklyn, Kings Co. Founder. (P. O. Box 760.)
Squibb, Edward R., 152 Columbia Heights, Brooklyn, Kings Co. Founder.
Squire, Charles L., 409 E. Church St., Elmira, Chemung Co.
Starr, Elmer G., 523 Delaware Ave., Buffalo, Erie Co.
Stearns, Benjamin W., Long Eddy, Sullivan Co.
Stearns, Henry S., 21 E. 44th St., New York, New York Co.
Steinke, Hermann C. O., 220 17th St., Brooklyn, Kings Co. Original.
Stern, Heinrich, 56 E. 76th St., New York, New York Co.
Stewart, Douglas H., 111 W. 64th St., New York, New York Co.
Stewart, Francis E., 8th St. and University Place, New York, New York Co.
Stewart, George D., 130 E. 36th St., New York, New York Co.
St. John, David, 256 State St., Hackensack, N. J. (Non-resident.)
Stockschlaeder, Peter, 186 South Ave., Rochester, Monroe Co.
Stockton, Charles G., 436 Franklin St., Buffalo, Erie Co.
Stone, Frank L., LeRoy, Genesee Co.
Stout, Edward G., Utica State Hospital, Utica, Oneida Co.
Strong, Cyrus J., 60 W. 75th St., New York, New York Co.
Strong, Orville C., Colden, Erie Co.
Strong, Thomas D., Westfield, Chautauqua Co. Founder.
Sullivan, John D., 74 McDonough St., Brooklyn, Kings Co.
Swan, William E., Saratoga Springs, Saratoga Co.
Swartwout, Henry B., Port Jervis, Orange Co.
Sweeney, James M., 135 Columbia St., Utica, Oneida Co.,
Sweet, Joshua J., Unadilla, Otsego Co.
Sweetman, James T., Jr., Ballston, Saratoga Co.
Syms, Parker, 50 W. 47th St., New York, New York Co.

Taylor, John H., Main and Jackson Sts., Holley, Orleans Co. Original.
Tefft, Charles B., Room 20, Arcade, Utica, Oneida Co.
Terriberry, Wm. S., 148 W. 74th St., New York, New York Co.
Theisen, Clement F., 172 Washington Ave., Albany, Albany Co.
Thomas T. Gaillard, 600 Madison Ave., New York, New York Co. Founder.
Thompson, Rufus A., Norwich, Chenango Co.
Thompson, Amos W., 521 Broadway, Saratoga Springs, Saratoga Co.
Thompson, Von Beverhout, 111 W. 43d St., New York, New York Co.
Thornton, William H., 572 Niagara St., Buffalo, Erie Co.
Thwing, Clarence, Fort Wrangel, Alaska. (Non-resident.)
Tompkins, Fred J., 112 2d Ave., Lansingburgh, Rensselaer Co.
Tompkins, H. C., Knowlesville, Orleans Co. Founder. (Retired list.)
Townsend, Charles E., 231 Liberty St., Newburgh, Orange Co.
Townsend, Morris W., Bergen, Genesee Co. Founder.
Townsend, Wisner R., 25 W. 53d St., New York, New York Co.
Trautman, Alex., 332 Lexington Ave., New York, New York Co.
Tripp, John D., 163 Genesee St., Auburn, Cayuga Co. Original.
Truesdell, Gifford, Wyoming, Wyoming Co.
Trull, Hiram P., Williamsville, Erie Co.
Tucker, Alfred B., 125 W. 21st St., New York, New York Co.
Tucker, Carlos P., 43 W. 26th St., New York, New York Co. Founder.
Turner, Melvin H., Ticonderoga, Essex Co. Original.
Tuttle, Charles Alling, 129 Whalley Ave., New Haven, Connecticut. (Non-resident.)
Twohey, John J., 301 Masten St., Buffalo, Erie Co.
Vanderhoof, Frederick D., Phelps, Ontario Co. Original.
Van de Warker, Ely, 404 Fayette Park, Syracuse, Onondaga Co. Founder.
Van Etten, Cornelius S., Rhinebeck, Dutchess Co.
Van Hoevenberg, Henry, Kingston, Ulster Co. Original.
Van Vranken, Adam T., 1603 3d Ave., Watervliet, Albany Co. Original.
Van Zandt, Henry C., 356 Summit Ave., Schenectady, Schenectady Co. Original.
Varney, Miles E., 513 Broadway, Saratoga Springs, Saratoga Co.
Vedder, George W., Philmont, Columbia Co.
Vincent, Ludger C., 72 W. 48th St., New York, New York Co.
Vineberg, Hiram N., 751 Madison Ave., New York, New York Co.
Wainwright, John W., 177 W. 83d St., New York, New York Co.
Waldo, Ralph, 68 W. 50th St., New York, New York Co.
Wales, Theron A., 403 William St., Elmira, Chemung Co. Original.
Walker, James E., Hornellsville, Steuben Co.
Wall, Charles A., 306 Hudson St., Buffalo, Erie Co.

Wallace, Edwin E., Jasper, Steuben Co.
Walser, William C., Livingston, West New Brighton, Richmond Co.
Walsh, Charles J., 1221 S. Salina St., Syracuse, Onondaga Co.
Walsh, Simon J., 25 E. 128th St., New York, New York Co.
Wandless, Henry W., 45 W. 32d St., New York, New York Co.
Ward, John J., Ellenville, Ulster Co.
Ward, R. Halsted, 53 4th St., Troy, Rensselaer Co.
Warner, John W., 19 York Ave., Saratoga Springs, Saratoga Co.
Washburn, Wickes, 21 E. 21st St., New York, New York Co.
Waterman, James S., 1193 Dean St., Brooklyn, Kings Co.
Waterworth, William, 3 Hancock St., Brooklyn, Kings Co.
Watkins, Robert L., 20 W. 34th St., New York, New York Co.
Waugh, Darwin W., 388 Clinton St., Brooklyn, Kings Co.
Webster, William B., Schuylerville, Saratoga Co.
Welles, S. R., Waterloo, Seneca Co. (Retired list.)
Wells, William L., New Rochelle, Westchester Co. Original.
Weston, Albert T., 226 Central Park West, New York, New York Co.
Whaley, James H., Rome, Oneida Co.
Wheeler, John T., Chatham, Columbia Co.
Wheelock, A. A., Elizabethtown, Essex Co.
Whitcomb, John L. C., Liberty, Sullivan Co.
White, J. Blake, 1013 Madison Ave., New York, New York Co.
White, Henry D., 121 E. Dominick St., Rome, Oneida Co.
White, William A., Binghamton, Broome Co.
Wieber, Adolph, 216 S. 9th St., Brooklyn, Kings Co.
Wiener, Joseph, 1046 5th Ave., New York, New York Co. Founder.
Wiggin, Frederick Holme, 55 W. 36th St., New York, New York Co.
Williams, George O., Greene, Chenango Co.
Williams, William H., 207 17th St., Brooklyn, Kings Co. Original.
Wilson, M. Jean, Warsaw, Wyoming Co.
Wilson, Thomas, 253 Warren St., Hudson, Columbia Co. Founder.
Winnie, John V. E., Sidney, Delaware Co.
Witter, George H., Wellsville, Allegany Co.
Wood, John Scott, 172 6th Ave., Brooklyn, Kings Co.
Woodend, William E., 58 W. 71st St., New York, New York Co.
Woodhull, Edward D., Monroe, Orange Co.
Woodruff, E. Gould, Auburn, Cayuga Co.
Woodruff, R. Allen, Philmont, Columbia Co.
Woodward, Julius H., 58 W. 40th St., New York, New York Co.
Woodworth, T. Floyd, Kinderhook, Columbia Co.
Woolworth, Earle E., 864 Sterling Place, Brooklyn, Kings Co.
Wyckoff, Cornelius C., 482 Delaware Ave., Buffalo, Erie Co. Founder.
Wyckoff, Richard M., 532 Clinton Ave., Brooklyn, Kings Co. Founder.
Wyeth, John A., 19 W. 35th St., New York, New York Co. Original.
Yankauer, Sidney, 224 E. 79th St., New York, New York Co.

Young, John D., Starkville, Herkimer Co. Original.
Young, Wm., Cold Spring, Putnam Co. Founder. (Retired list.)
Zeh, Edgar, 32 Broad St., Waterford, Saratoga Co.
Zeh, Merlin J., 1521 Broadway, Watervliet, Albany Co.

Of the 164 Founders, 72 remain on the list; of the 286 Original Fellows, 104 remain on the list. Total Fellowship, 616.

NON-RESIDENT FELLOWS.

Edward Ames, Kalamazoo, Mich.
Thomas D. Crothers, Hartford, Conn.
Juan B. de Landeta, Havana, Cuba.
Stuart Eldridge, Yokohama, Japan.
Thos. B. Enders, Hartford, Conn.
Erwin G. Inlay, Salix, Iowa.
Geo. E. Lyon, St. Louis, Mo.
Wm. Stevenson MacLaren, Litchfield, Conn.
Geo. D. McGuaran, Lawrence, Mass.
William Scott Muir, Truro, Nova Scotia.
Nelson A. Pomeroy, Waterbury, Conn.
Benj. M. Ricketts, Cincinnati, O.
Henry Spence, Jersey City, N. J.
David St. John, Hackensack, N. J.
Clarence Thwing, Fort Wrangel, Alaska.
Charles Alling Tuttle, New Haven, Conn.
16

RETIRED FELLOWS.

Edmund S. F. Arnold, Newport, R. I. (1898).
Charles G. Bacon, Fulton, Oswego County (1891).
Moses M. Bagg, Utica, Oneida County (1891).
George B. Banks, Hartsdale, Westchester County (1892).
Nelson W. Bates, Central Square, Oswego County (1897).
John E. Beers, Danby, Tompkins County (1899).
Francis R. Bentley, Cheshire, Ontario County (1891).
William N. Bonesteel, Troy, Rensselaer County (1890).
Amos H. Brundage, Brooklyn, Kings Co. (1897).
Francis A. Burghardt, Buffalo, Erie County (1899).
Alonzo Churchill, Utica, Oneida County (1890).
C. L. Dayton, Buffalo, Erie County (1891).
Byron DeWitt, Oswego, Oswego County (1898).
Elias T. Dorland, Buffalo, Erie County (1899).
Ellsworth Eliot, New York, New York County (1899).
William H. Flint, Ridgefield, Conn. (1895).
Philip DuB. HoornBeek, Wawarsing, Ulster County (1891).

Homer O. Jewett, Cortland, Cortland County (1898).
Jonathan S. Kneeland, Onondaga County (1890).
John Lambert, Salem, Washington County (1898).
Francis E. Martindale, New York, New York County (1899.)
Wm. McCollom, Brooklyn, Kings County (1899).
Edward M. Moore, Rochester, Monroe County (1896).
John B. Nold, Utica, Oneida County (1894).
Hiram A. Pooler, New York, New York County (1892).
Harry N. Porter, Washington, D. C. (1891).
Avery Segur, in Europe (1893).
E. W. Simmons, Canandaigua, Ontario County (1892).
Smith A. Skinner, Hoosick Falls, Rensselaer County (1895).
Richmond J. Southworth, Washington, D. C. (1894).
H. C. Tompkins, Knowlesville, Orleans County (1893).
S. R. Welles, Waterloo, Seneca County (1894).
William Young, Cold Spring, Putnam County (1891).

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CORRESPONDING FELLOW.

Henry O. Marcy, 180 Commonwealth Ave., Boston, Mass. (1890).

DECEASED FELLOWS.

Recorded since the publication of the last list.

George W. Baker, Brooklyn, Kings Co. Founder.
Lyman Barton, Willsborough, Essex Co. Founder.
John C. Benham, Hudson, Columbia Co. Original.
William Cramer, Poughkeepsie, Dutchess Co. Founder.
John J. Dunlop, Waterford. Saratoga Co. Original.
James F. Feely, Brooklyn, Kings Co.
John Flickinger, Trumansburg, Tompkins Co.
Charles S. Grant, Saratoga Springs, Saratoga Co. Founder.
Joseph C. Greene, Buffalo, Erie Co. Founder.
William Hagadorn, Gilboa, Schoharie Co. Original.
Mary Kenyon, Kings Ferry, Cayuga Co. Original.
Nathaniel W. Leighton, Brooklyn, Kings Co. Original.
Timothy J. McGillicuddy, New York, New York Co.
S. B. Wylie McLeod, New York, New York Co. Founder.
Selden J. Mudge, Olean, Cattaraugus Co.
George E. Pierson, Kirkwood, Broome Co.
Julius A. Roth, New York, New York Co.
Joseph G. Wallach, New York, New York Co. Original.

16

DECEASED FELLOWS.

DECEASED FELLOWS.

Name.	Age.	County.	Place of Birth.	Date of Death.	Medical College.	Year of Graduation.
Abell, Ira H. (F)[1]	71	Jefferson	Fairfield, Vt	April 29, 1894	Vermont Medical College.	1844
Adams, John G. (F)	77	New York	New York City	June 19, 1884	Coll. Phys. and Surg., N.Y.	1830
Allaben, Orson M. (O)[2]	83	Delaware	Delaware Co., N. Y.	Nov. 27, 1891	Woodstock, Vt.	1831
Allen, Amos (O)	84	Rensselaer	Petersburgh, N. Y.	March 8, 1899	Berkshire Medical College.	1846
Andrews, John S. (O)	61	Kings	Bristol, Conn	Jan. 3, 1889	Med. Dep., Univ. City N. Y.	1849
Andrews, Judson B. (F)	60	Erie	North Haven, Conn.	Aug. 3, 1894	Yale Medical College	1863
Ashton, Isaiah H.	39	Westchester	Philadelphia, Pa	Feb. 16, 1889	Med. Dep., Univ. Penn.	1870
Avery, George W. (F)	61	Chenango	Earlville, N. Y.	Nov. 1, 1888	Albany Medical College	1850
Ayres, Alexander (F)	74	Montgomery.	Oppenheim, N. Y.	Aug. 27, 1886	Castleton, Vt., Med. Coll.	1842
Babcock, Myron N. (F)	73	Saratoga	West Berkshire, Vt.	May 21, 1892	Vermont Medical College.	1842
Baker, George W. (F)	61	Kings	Richfield Springs, N. Y.	Dec. 5, 1898	Coll. Phys. and Surg., N.Y.	1864
Ballou, William R.	29	New York	Bath, Me.	March 9, 1893	Bellevue Hosp. Med. Coll.	1886
Barker, Arthur M. (O)	37	Erie	Kendall, Orleans Co., N. Y.	Dec. 6, 1887	Med. Dep., Univ. Buffalo.	1877
Bartlett, Frederick W. (O).	71	Erie	Kingston, Mass.	March 17, 1897	New York Medical Coll.	1854
Barton, Lyman (F)	87	Essex	Hebron, N. Y.	Oct. 20, 1899	Dartmouth Med. College.	1839
Bates, Xyris T. (O)	59	Dutchess	Lebanon Springs, N. Y.	Jan. 2, 1899	Yale Medical College	1862
Bathgate, James (O)	65	New York	New York	March 27, 1891	Coll. Phys. and Surg., N.Y.	1846
Baynes, William T. (O)	48	Rensselaer	England	Jan. 22, 1892	Albany Medical College.	1871
Bemus, William P.	63	Chautauqua	Chautauqua Co., N. Y.	Sept. 19, 1890	Berkshire Medical College	1847
Benham, John C. (O)	82	Columbia	Catskill, N. Y.	Feb. 19, 1899	Castleton, Vt., Med. Coll.	1837
Bennett, Thos. W. (O)	62	Sullivan	Altona, Clinton Co., N.Y	Nov. 27, 1896	University of New York.	1896
Blakeman, William N. (O).	85	New York	Roxbury, Conn.	Aug. 10, 1890	Yale Medical College	1832
Booth, Wilbur H. (O)	44	Oneida	Huntington, Conn.	Sept. 26, 1897	Yale Medical College	1874
Buchanan, Alexander (O).	65	New York	Glasgow, Scotland	Sept. 2, 1896	New York Medical College	1862
Buckley, Charles (O)	54	Monroe	Rochester, N. Y.	Sept. 1, 1891	Med. Dep., Univ. Penn.	1870
Bucklin, Daniel D. (O)	70	Rensselaer	Brunswick, N. Y.	April 19, 1890	Albany Medical College.	1846

Budd, J. Henry (O).....	45	Ontario	United States	Nov. 14, 1896...	Buffalo Medical College..	1875
Burchard, Thos. H. (O)....	48	New York ...	New York City.....	Feb. 25, 1890...	Bellevue Hosp. Med. Coll.	1872
Burton, Matthew H. (F)..	62	Rensselaer ..	Albany, N. Y.....	April 28, 1895...	Albany Medical College..	1863
Burwell, George N. (O)...	72	Erie	Norway, Herkimer Co.	May 15, 1891....	Med. Dep. Univ. Penn....	1843
Carroll, Alfred Ludlow (F)	60	New York ...	New York City.....	Oct. 30, 1893....	Med. Dep. Univ. City N.Y.	1855
Case, Mary W.....	33	Rensselaer ..	New York State.....	Aug. 19, 1889....	Woman's Med. Coll. Phil.	1882
Chace, William (F).....	58	Chautauqua .	St. Catharine's, Canada	Dec. 27, 1891...	Coll. Phys. and Surg., N.Y.	1858
Church, Allen S. (F).....	62	New York ...	Great Barrington, Mass	Oct. 24, 1884....	Castleton, Vt., Med. Coll..	1848
Clark, Alonzo	80	New York ...	Chester, Mass.....	Sept. 13, 1887....	Coll. Phys. and Surg., N.Y.	1835
Clark, Simeon T. (O).....	55	Niagara	Canton, Mass.....	Dec. 24, 1891....	Berkshire Med. College...	1860
Coit, William N. (F).....	52	Clinton	Plattsburgh, N. Y.....	Aug. 4, 1886....	Med. Dep. Univ. Penn....	1856
Collins, Isaac G. (F).....	53	Westchester .	Granville, N. Y.....	Dec. 18, 1885....	Albany Medical College..	1858
Collins, Thomas B. (O)....	61	Monroe	Mendon, N. Y.....	Feb. 17, 1888...	Jefferson Med. Coll., Phila	1851
Cooper, William S. (F)....	70	Rensselaer ..	Scotland	May 26, 1890....	Albany Medical College..	1860
Copley, Heman D.....	45	Chenango ...	Harpersfield, N. Y.....	July 1, 1896....	Coll. Phys. and Surg., N.Y.	1875
Cornell, F. O. (O).....	29	Montgomery .	Glenville, N. Y.....	Dec. 3, 1884	Albany Medical College..	1880
Cotes, J. R.....	54	Genesee	Batavia, N. Y.....	March 20, 1884..	Med. Dep. Univ., Buffalo.	1852
Cramer, William (F).....	39	Dutchess	Poughkeepsie, N. Y....	April 4, 1899....	Rutgers Medical College..	1882
Creamer, Joseph	63	Kings	Halifax, Nova Scotia..	Jan. 6, 1893.....	Coll. Phys. and Surg., N.Y.	1850
Cronyn, John F. (F).....	70	Erie	Ireland	Feb. 11, 1898....	Med. Dep. Univ. Toronto.	1850
Cruttenden, Albert G.....	75	Ontario	Covington, N. Y.....	June 7, 1890....	Willoughby Univ., Ohio...	1840
Dagenais, Alphonse (O)...	50	Erie	Montreal, Canada.....	March 4, 1897...	Med. Dep. Victoria Univ..	1869
Damainville, Lucien.....	52	New York ...	Erie, Pa.....	Dec. 15, 1891...	Long Island Coll. Hosp...	1860
Davidson, John (F).....	91	Queens	New York City.....	Dec. 26, 1884....	Lic. N. Y. State Med. Soc..	1829
De La Mater, S. G. (F)...	73	Schenectady .	Bethlehem, N. Y.....	June 23, 1888...	Albany Medical College..	1842
de Zouche, Isaac (F).....	72	Fulton	.....	Feb. 22, 1895....	Albany Medical College..	1869
Du Bois, Abram (F).....	81	New York ...	Red Hook, N. Y.....	Aug. 29, 1891...	Coll. Phys. and Surg., N.Y.	1835
Dunlop, John J. (O).....	80	Saratoga.....	Ireland.....	March 19, 1899..	University of New York..	1854
Eager, William B. (O)....	65	Orange	Orange Co., N. Y.....	Jan. 18, 1890....	Coll. Phys. and Surg., N.Y.	1848
Earll, George W. (F).....	53	Onondaga ...	Mottville, N. Y.....	July 8, 1890....	Buffalo Medical College..	1858
Eastman, L. O.....	40	Broome	Berkshill, N. Y.....	Sept. 15, 1897...	Med. Dep. Univ. Buffalo..	1889
Edgerly, Edward F. (F)...	50	Essex	Moriah, Essex Co. N. Y.	June 23, 1889...	Albany Medical College..	1864
Elder, Jennie S.....	32	Onondaga ...	Syracuse, N. Y.....	Feb. 2, 1889.....	Med. Dep. Syracuse Univ.	1878
Farrington, Edward S....	30	New York ...	Brooklyn, N. Y.....	Sept. 7, 1896....	Coll. Phys. and Surg., N.Y.	1892

[1] (F) Founder. [2] (O) Original Fellow.

DECEASED FELLOWS — *Continued.*

Name.	Age.	County.	Place of Birth.	Date of Death.	Medical College.	Year of Graduation.
Feely, James F.	55	Kings	London, England	Aug. 30, 1899.	University of New York.	1863
Ferguson, James (O).	74	Warren	Kortwright, N. Y.	Oct. 27, 1892.	Castleton, Vt., Med. Coll.	1841
Field, Matthew D.	41	New York	Nashville, Tenn	March 8, 1895.	Bellevue Hosp. Med. Coll.	1879
Fitch, William (F).	70	Tompkins	Franklin, N. Y.	Sept. 14, 1893.	Albany Medical College.	1846
Flickinger, John	67	Tompkins	Fayette, N. Y.	June 22, 1899.	Albany Medical College.	1856
Flint, Austin (F).	73	New York	Petersham, Mass.	March 13, 1886.	Harvard Medical School.	1833
Flood, Patrick Henry (O).	72	Chemung	Pennsylvania	March 12, 1886.	Geneva Medical College.	1845
Fox, Eli	57	Herkimer	Columbia, N. Y.	Oct. 13, 1890.	Med. Dep. Univ. City N.Y.	1855
Fuller, Winfield S. (O).	48	Monroe	Walworth, N. Y.	Jan. 13, 1888.	Coll. Phys. and Surg., N.Y.	1861
Fuller, Robert	72	Schenectady	Schenectady, N. Y.	May 9, 1894.	Albany Medical College.	1875
Furman, Guido (O).	65	New York	Germany	Dec. 2, 1896.	Med. Dep. Univ. City N.Y.	1856
Furman, J. Henry (O).	63	Westchester	Clifton Park, N. Y.	May 26, 1896.	Coll. Phys. and Surg., N.Y.	1864
Garrish, John P. (O).	76	New York	New Brunswick, N. J.	April 1, 1891.	Jefferson Med. Coll., Phila.	1836
Gay, Charles C. F. (F).	66	Erie	Pittsfield, Mass.	March 27, 1886.	Berkshire Medical College	1846
Gillis, William (F).	72	Franklin	Cornwall, Canada	Feb. 17, 1894.	Castelton, Vt., Med. Coll.	1849
Goldthwaite, Henry	52	New York	Mobile, Ala.	Jan. 3, 1895.	Bellevue Hosp. Med. Coll.	1876
Govan, William (F).	65	Rockland	Barnet, Vt.	March 22, 1894.	New York Medical College	1854
Grant, Chas. S. (F).	54	Saratoga	Hobart, N. Y.	Feb. 6, 1899.	Albany Medical College.	1866
Graves, Ezra (O).	56	Montgomery	Russia, N. Y.	June 30, 1895.	Med. Dep. Univ. Buffalo.	1865
Gray, John Perdue (F).	61	Oneida	Half Moon, Pa.	Nov. 29, 1886.	Med. Dep. Univ. Penn.	1849
Gray, John W. (F).	53	Livingston	America	April 17, 1886.	University of New York.	1856
Green, Caleb (F).	73	Cortland	La Fayette, N. Y.	May 10, 1893.	Geneva Medical College.	1844
Greene, Joseph C. (F).	69	Erie	Lincoln, Vt.	Jan. 3, 1899.	Albany Medical College.	1855
Griswold, Gaspar (O).	29	New York	New York City.	March 4, 1886.	Bellevue Hosp. Med. Coll.	1878
Guernsey, Desault (F).	55	Dutchess	Wilton, N. Y.	Dec. 9, 1885.	Coll. Phys. and Surg., N.Y.	1850
Hagadorn, William (O).	51	Schoharie	Gilboa, N. Y.	March 2, 1899.	University of New York.	1872
Hall, H. C. (O).	41	Broome	America	June 1, 1887.	University of New York.	1869
Hall, John E. (O).	38	Albany	New Marlboro', Mass.	Nov. 3, 1886.	Albany Medical College.	1877

Hamilton, Frank H. (F)..	73	New York ...	Wilmington, Vt.....	Aug. 11, 1886...	Med. Dep. Univ. Penn.. .	1835
Hammer, Charles	65	Schenectady .	Germany	April 7, 1897....	Goettingen, Germany	1854
Higgins, Seabury M. (O)..	67	Onondaga ...	Brewster, Mass.....	Dec. 9, 1889....	Med. Dep. Univ. City N.Y.	1848
Hinds, Frederic J. (O)....	32	Washington .	East Greenbush, N. Y..	April 26, 1887...	Bellevue Hosp. Med. Coll.	1876
Hodgman, William H. (F).	46	Saratoga....	Saratoga Springs, N.Y.	July 15, 1898....	Coll. Phys. and Surg., N.Y.	1873
Hogan, Michael K.....	64	New York ...	County Clare, Ireland	Feb. 25, 1894...	Coll. Phys. and Surg., N.Y.	1858
Hollister, Edwin O. (O)...	41	Ontario	Batavia, N. Y.....	Oct. 8, 1887....	Bellevue Hosp. Med. Coll.	1874
Hubbard, George E.....	86	New York ...	Natural Bridge, N. Y..	March 23, 1893..	Med. Dep. Univ. City N.Y.	1883
Hubbard, Samuel T. (F)...	36	New York ...	Haddam, Conn.....	June 1, 1894....	Coll. Phys. and Surg., N.Y.	1835
Hughes, Henry R.....	47	Oneida	So. Trenton, N. Y.....	Sept. 27, 1894...	Bellevue Hosp. Med. Coll.	1876
Hühne, August (F).....	76	Ulster	Germany	Dec. 2, 1897....	New York Medical College	1858
Hull, William H.....	51	Rensselaer ..	Petersburgh, N. Y.....	Dec. 1, 1894.....	Albany Medical College..	1866
Hunt, James H. (O).....	44	Orange	Centreville, Sullivan Co	Dec. 20, 1892...	Bellevue Hosp. Med. Coll.	1872
Huntington, Henry K. (O).	51	Westchester .	Hartford, Conn.....	Feb. 28, 1897....	Coll. Phys. and Surg., N.Y.	1868
Husted, Nathaniel C. (F)..	66	Westchester .	Round Hill, Conn.....	Nov. 19, 1891...	Med. Dep. Univ. City N.Y.	1850
Hutchison, Joseph C. (F)..	60	Kings	Old Franklin, Mo.....	July 17, 1887...	Med. Dep Univ. Penn....	1848
Hyde, Frederick (F).....	80	Cortland	Whitney Point, N. Y..	Oct. 15, 1887....	Fairfield Med. Coll., N. Y.	1836
Ilgen, Ernst (O).....	82	Kings	Bavaria	March 4, 1897..	Munich, Bavaria	1836
Ingraham, Samuel (O).....	70	Wayne.....	Clarksville, N. Y.....	Aug. 3, 1893....	Albany Medical College...	1849
Johnston, Francis U. (F)..	66	Richmond ...	New York City.....	Nov. 20, 1892...	Coll. Phys. and Surg., N.Y.	1852
Kenyon, Mary (O).....	61	Cayuga	Venice, N. Y.....	July 26, 1899....	Med. Dep. Univ. Mich....	1874
King, James E. (O).....	66	Erie	Warren, Pa.....	Jan. 21, 1888....	Buffalo Medical College..	1848
Kittredge, C. Stewart (F).	58	Dutchess	Mount Vernon, N. H...	Aug. 19, 1896...	Coll. Phys. and Surg., N.Y.	1863
Knapp, Edwin A. (O)	67	Onondaga ...	New York State.....	Dec. 7, 1890....	Geneva Medical College..	1851
Knapp, John H. (O).....	67	Cortland	New Fairfield, Conn...	April 30, 1886...	{ Chenango Co. Med. Soc. { Geneva Medical College.	1843 1861
Lamb, Milton M.....	68	Rensselaer ..	Verona, N. Y.....	April 10, 1892...	Castleton, Vt., Med. Coll...	1856
Lamont, John Campbell..	47	Wayne	Edinburgh, Scotland...	Dec. 13, 1887....	Med. Dep. Univ. City N.Y.	1862
Lauer, Eugene (O).....	40	New York ...	Germany	Oct. 31, 1886....	Giessen and Marburg....	1868
Leighton, Nathaniel W.(O)	66	Kings	Falmouth, Me.....	Aug. 12, 1899...	New York Medical College	1858
Lester, Sullivan W. (O)...	40	Rensselaer ..	Niantic, Conn.....	Jan. 5, 1890....	Med. Dep. Univ. City N.Y.	1881
Linsly, Jared (F).....	84	New York ...	Northfield, Conn.....	July 12, 1887....	Coll. Phys. and Surg., N.Y.	1829
Long, Alfred J.....	71	Washington .	Rutland, Vt.....	Aug. 10, 1895...	Med. Dep. Univ. City N.Y.	1853
Lusk, William T. (F).....	59	New York ...	Norwich, Conn.....	June 12, 1897...	Bellevue Hosp. Med. Coll.	1864

DECEASED FELLOWS — *Continued.*

Name.	Age.	County.	Place of Birth.	Date of Death.	Medical College.	Year of Graduation.
Lyman, Elijah S. (O).....	80	Chenango ...	Torrington, Conn.....	Nov. 20, 1892...	Regents University, N. Y..	1870
Magee, Charles M.....	42	Onondaga ...	Groveland, N. Y.....	Oct. 29, 1896....	Bellevue Hosp. Med. Coll.	1880
Magee, Daniel (O).....	..	Rensselaer ..	.....	Jan. 4, 1897....	Dartmouth Med. College..	1866
Matthews, David	60	New York ...	Sullivan Co., N. Y.....	July 9, 1891....	Coll. Phys. and Surg., N.Y.	1860
Maury, Rutson	27	New York ...	North Carolina.....	May 5, 1892....	Bellevue Hosp. Med. Coll.	1887
McClellan, Christopher R.	73	Kings	Maryland	Jan. 13, 1887....	Med. Dep. Univ. Maryland	1835
McEwen, Robert C. (F)...	60	Saratoga	Bainbridge, N. Y.....	Dec. 26, 1893....	Coll. Phys. and Surg., N.Y.	1856
McGillicuddy, Timothy J..	41	New York ...	Lewiston, Me.....	Jan. 16, 1899....	Med. Dep. Univ. City N. Y.	1882
McIlroy, Samuel H.....	58	New York ...	Scotland, Penn.....	Jan. 5, 1898....	Long Island Coll. Hosp...	1864
McLeod, S. B. Wylie (F)...	68	New York ...	.....	Aug. 23, 1899...	Coll. Phys. and Surg., N.Y	1852
McLochlin, James A.....	..	New York ...	.....	July 16, 1897....	University of New York..	1874
McNamara, Lawrence J.(O)	36	New York ...	.....	Jan. 28, 1897....	Bellevue Hosp. Med. Coll	1882
McTammany, George H...	31	Rensselaer ..	Troy, N. Y.....	April 12, 1891...	Albany Medical College..	1884
McTammany, Wm. F. (O).	36	Rensselaer ..	Troy, N. Y.....	July 21, 1888....	Bellevue Hosp. Med. Coll.	1880
Merritt, George (O).....	66	Otsego.....	Cherry Valley, N. Y...	Oct. 26, 1895....	Castleton, Vt., Med. Coll..	1848
Mitchell, Howard E. (F)..	49	Rensselaer ..	Hudson, N. Y.....	Aug., 1894.....	University of Maryland..	1882
Moore, Joseph W. (F).....	47	Albany	Troy, N. Y.....	Sept. 9, 1886....	Castleton, Vt., Med. Coll..	1859
Morrell, Isaac	79	Chemung ...	Cornish, Me.....	Sept. 8, 1887....	Bowdoin Medical College.	1832
Mudge, Selden J.....	47	Cattaraugus.	Tonawanda, N. Y.....	April 19, 1899...	Med. Dep. Univ. Buffalo.	1877
Murdoch, James B.....	66	Non-resident.	Glasgow, Scotland.....	Oct. 29, 1896....	Coll. Phys. and Surg., N.Y.	1854
Murray, William D. (O)...	..	Erie	.....	1897.....	Nat. Med. Coll., Wash., D.C	1860
Nichols, Henry W. (F)....	75	Ontario	Whiting, Vt.....	May 11, 1895....	Geneva Medical College..	1854
O'Meagher, William	67	New York ...	Killenaule, Ireland.....	Feb. 24, 1896....	University of New York..	1857
Pask, William (O).....	55	Erie	England	Aug. 24, 1884...	Med. Dep. Univ. Buffalo..	1884
Peck, M. R. (O).....	62	Warren	Sand Lake, N. Y.....	April 4, 1884...	Albany Medical College..	1851
Perry, Nathaniel M. (O)...	77	Steuben	Troupsburg, N. Y.....	April 3, 1894....	Geneva Medical College..	1845
Pierson, George E.....	63	Broome	.....	Sept. 4, 1899....	Geneva Medical College..	1871

Pollard, Abiathar	90	Essex	Bridgewater, Vt.	April 15, 1893.	Castleton, Vt., Med. Coll.	1836
Pomeroy, Charles G. (F).	71	Wayne	New York	Dec. 14, 1887.	{ Ontario Co. Med. Soc. / Jefferson Med. Coll. Phil.	1837 / 1850
Porteous, James G. (F).	56	Dutchess	Moriah, N. Y.	May 11, 1895.	Harvard Medical School.	1862
Preston, John R. (O).	89	Saratoga	Norway, N. Y.	Jan. 2, 1898.	Fairfield Med. Coll., N. Y.	1833
Pryer, W. Chardavoyne (F)	54	Westchester	New York City	Sept. 24, 1888.	Coll. Phys. and Surg., N.Y.	1862
Purdy, Isaac (O).	57	Sullivan	Wallkill, N. Y.	Dec. 6, 1885.	Castleton, Vt., Med. Coll.	1851
Ransom, Horace Bascom.	..	New York		July 27, 1895.	Coll. Phys. and Surg., N.Y.	1857
Read, Ira B.	..	New York		July 4, 1897.	Bellevue Hosp. Med. Coll.	1868
Reynolds, Rufus C. (F).	79	Monroe	Columbia, Herkimer Co.	Dec. 22, 1886.	Fairfield Med. Coll., N. Y.	1830
Rice, George	44	Saratoga	Mechanicville, N. Y.	Jan. 12, 1894.	Albany Medical College.	1872
Ring, William (F).	63	Erie	United States.	April 20, 1887.	Med. Dep. Univ. Buffalo.	1848
Robinson, Joseph W.	49	Steuben	Angelica, N. Y.	Jan. 4, 1887.	Buffalo Medical College.	1862
Robb, William H. (F).	55	Montgomery	Florida, Montgomery Co	Jan. 12, 1898.	Albany Medical College.	1865
Rochester, Thomas F. (F).	63	Erie	Rochester, N. Y.	May 24, 1887.	Med. Dep. Univ. Penn.	1848
Roth, Julius A.	40	New York	New York City	Jan. 15, 1899.	Bellevue Hosp. Med. Coll.	1882
Sabin, Robert Hall (F).	56	Albany	Saxton's River, Vt.	Dec. 4, 1888.	Albany Medical College.	1856
Sabine, Gustavus A. (O).	84	New York	County Dorset, Eng.	Nov. 17, 1896.	Royal Coll. Surg., London.	1832
Sayre, Lewis Hall (F).	38	New York	New York City	Jan. 2, 1890.	Bellevue Hosp. Med. Coll.	1876
Schoonmaker, E. J. (F).	65	Seneca	Ulster Co., N. Y.	Aug. 19, 1889.	Geneva Medical College.	1848
Seaman, Frank G.	37	Seneca	Fairfield, Herkimer Co.	July 19, 1898.	Albany Medical College.	1881
Selden, Orrin G. (O).	77	Greene	Perthshire, Scotland.	Jan. 27, 1895.	Starling Medical College.	1867
Shafer, John P. (O).	..	Herkimer		Jan. 8, 1899.	Coll. Phys. and Surg., N.Y.	1848
Skiff, George V. (O).	53	New York	Pike, N. Y.	Jan. 28, 1890.	Med. Dep. Univ. City N.Y.	1860
Slack, Henry (F).	57	Dutchess	Albany, N. Y.	Dec. 10, 1886.	Albany Medical College.	1852
Slocum, J. O. (F).	65	Onondaga	Pompey, N. Y.	Mar. 3, 1885.	Castleton, Vt., Med. Coll.	1846
Smith, David M.	35	Yates	New York City	Mar. 19, 1891.	Bellevue Hosp. Med. Coll.	1877
Smith, J. Lewis (O).	70	New York	Onondaga Co., N. Y.	June 9, 1897.	Coll. Phys. and Surg., N.Y.	1853
Smith, Joseph T. (F).	60	Ontario	Farmington, N. Y.	Dec. 9, 1890.	Jefferson Med. Coll., Phila.	1854
Smith, Marcellus R. (O).	74	Cortland	Taylor, N. Y.	Dec. 11, 1890.	Geneva Medical College.	1847
Sprague, John A. (O).	43	Wayne	Williamson, N. Y.	Mar. 9, 1897.	Med. Dep. Univ. City N.Y.	1879
Sprague, Lathrop S.	77	Wayne	Bristol, N. Y.	Dec. 4, 1897.	Geneva Medical College.	1845
Sprague, William B. (F).	55	Genesee	Pavilion, N. Y.	Mar. 16, 1891.	Med. Dep. Univ. Buffalo.	1857
Squire, Truman Hoffman.	66	Chemung	Russia, Herkimer Co.	Nov. 27, 1889.	Coll. Phys. and Surg., N.Y.	1848
Steele, Charles G.	27	Erie	Buffalo, N. Y.	Feb. 12, 1888.	Med. Dep. Univ. Buffalo.	1886
Steinführer, Gus. A. (F).	37	Schenectady	Germany	July 2, 1890.	Coll. Phys. and Surg., N.Y.	1874

DECEASED FELLOWS — *Concluded.*

Name.	Age.	County.	Place of Birth.	Date of Death.	Medical College.	Year of Graduation.
Stevens, Frederick P. (O).	31	New York ...	Ithaca, N. Y.....	Dec. 4, 1884.....	Bellevue Hosp. Med. Coll.	1877
Stevenson, William G.....	44	Rockland ...	Troy, Ohio	Feb. 3, 1888.....	Bellevue Hosp. Med. Coll.	1864
Sutton, George Samuel....	63	Dutchess	Louisville, N. Y.....	Sept. 6, 1888....	Coll. Phys. and Surg., N.Y.	1859
Sweet, Joseph J. (O).....	73	Otsego	Falland, Conn.....	Aug. 3, 1895....	Philadelphia Med. College.	1848
Taylor, Isaac E. (F).....	69	New York ...	Philadelphia, Pa.....	Oct. 30, 1889....	Med. Dep. Univ. Penn....	1834
Thayer, William Henry...	75	Kings	Milton, Mass.....	Dec. 22, 1897...	Harvard Medical School..	1844
Traver, Richard D. (O)....	56	Rensselaer ..	Half Moon, N. Y.....	May 17, 1895...	Bellevue Hosp. Med. Coll.	1867
Tremaine, Wm. S. (F).....	59	Erie	Canada	Jan. 9, 1898....	Univ. of Pennsylvania....	1859
Truax, John Gilbert.....	49	New York ...	Durhamville, N. Y.....	Feb. 16, 1898...	Rush Medical College.....	1871
Vanderveer, John Rutgert.	69	Orange	Newtown, Queens Co..	Sept. 27, 1898...	University of New York..	1852
Van Dusen, Melville E....	36	Steuben	Wheeler, N. Y.....	June 15, 1891...	Med. Dep. Univ. Michigan.	1879
Van Wyck, Richard C. (O).	52	Dutchess	Hopewell Junc., N. Y..	Jan. 28, 1896....	Coll. Phys. and Surg., N.Y.	1867
Vaughn, Frank O. (O)....	44	Erie	Buffalo, N. Y.....	Mar. 18, 1891...	Med. Dep. Univ. Buffalo..	1880
Wallach, Joseph G. (O)....	44	New York ...	Hartford, Conn.....	Nov. 21, 1899...	Bellevue Hosp. Med. Coll.	1877
Ward, Charles S. (F).....	55	New York ...	Rushville, Illinois.....	July 31, 1898...	Yale Medical College.....	1863
Warner, Fred. M.....	..	New York ...	.....	Oct. 9, 1895....	Coll. Phys. and Surg., N.Y.	1880
Webb, Edwin (O).....	85	Queens	Devonport, England...	Jan. 29, 1890....	Coll. Phys. and Surg., N.Y.	1825
West, M. Calvin.....	58	Oneida	Rome, N. Y.....	Oct. 20, 1891....	Med. Dep. Univ. Michigan.	1860
White, Francis V.....	56	New York ...	New York City.....	Oct. 9, 1889.....	Med. Dep. Univ. City N.Y	1855
White, William T. (F).....	64	New York ...	Richmond, Me.....	Sept. 17, 1893...	New York Medical College	1855
Wieber, George (O).....	70	Kings	Weitzler, Germany.....	Jan. 31, 1896....	Kings Co. Medical Society.	1875
Willis, A. B.....	43	Schenectady .	Coeymans, N. Y.....	May 10, 1891...	Albany Medical College..	1870
Winship, Cornelius A. (O).	62	Rensselaer ..	Litchfield, Conn.....	Feb. 14, 1888...	Albany Medical College..	1858
Wood, Charles S. (F).....	65	New York ...	Litchfield, Conn.....	Feb. 1, 1890.....	Jefferson Med. Coll., Phila.	1851
Woodend, William D. (F).	61	Suffolk	Portsmouth, Va.....	Mar. 8, 1893....	Med. Dep. Univ. Penn....	1855
Young, John (O).....	71	Dutchess	Ireland	Sept. 2, 1893....	Coll. Phys. and Surg., N.Y.	1844
Young, Oscar H. (O).....	43	Delaware ...	Pennsylvania.	Jan. 21, 1889....	Jefferson Med. Coll., Phila.	1876

Total deceased Fellows, 210.

ORGANIZATIONS IN AFFILIATION WITH THE NEW YORK STATE MEDICAL ASSOCIATION.

Hornellsville Medical Association.

Kings County Medical Association.

Medical Association of Troy and Vicinity.

New York County Medical Association.

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